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Validation of The Experience of Rehabilitation Questionnaire

By

Tula Dawn Paul

A thesis submitted to the Faculty of Graduate Studies and Research

in partial fulfillment of the requirements for the degree of

Master of Education

in

Counselling Psychology

Department of Educational Psychology

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The University of Alberta

Faculty of Graduate Studies and Research

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Validation of The Experience of Rehabilitation Questionnaire submitted by Tula Paul in partial fulfillment of the requirements for the degree of Master of Education in Counselling Psychology.

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Date: Aug 28, 2003

Abstract

Knish and Calder (1999), through concept mapping, grouped the rehabilitation experience of men with lower back pain into seven themes: Denial/Regret, Self-Defeating/Passive, Medication Use/Pain Focus, Cautious Realism, Accepting Limitations, Adaptive Coping, and Responsibility for Rehabilitation. To aid in the measurement of these belief themes The Experience of Rehabilitation Questionnaire (TERQ) was created. The TERQ, along with The Coping Strategies Questionnaire (CSQ), The Beck Depression Inventory-II (BDI-II), The Pain Disability Index (PDI), and the Pain Stages of Change Questionnaire (PSCQ) were administered to determine the validity of the TERQ. The results indicate that TERQ is sensitive to treatment effects and is useful for differentiating between current and past pain beliefs. Denial/Regret and Self-Defeating/ Passive are highlighted as obstacles or the antithesis of coping. Adaptive Coping and Responsibility for Rehabilitation are found as goals for treatment and examples of effective coping. Whereas, Medication Use/Pain Focus, Cautious Realism, and Accepting Limitations themes did not correlate with the measures given and may document a progression from non-adaptive coping to more adaptive coping skills.

Dedicated to:

My parents for their unfailing support and love,

My brother for his support and personal experience with chronic pain that has shaped my perspective and research interests,

To my husband's family for keeping me fed and sane throughout my schooling

And to my husband for always believing in me.

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Chapter 1: Introduction

Chronic pain is one of the leading causes of long-term disability. In fact, according to Sun Media (2002), 29% of Canadians suffer from chronic pain. In addition, Van Tulder, Koes, and Bouter (1995) reported that the human and financial costs are staggering, approximately 1.7% of the gross national product. Specifically in Edmonton, Alberta, Canada, 443 per 1000 adults (44.3%), approximately 204, 602 adults, could have chronic pain (Birse, 1994). The financial costs of this rate are incurred through employment, employability (sick pay, disability claims, worker's compensation claims, retaining and replacing workers and loss of productivity), decreased volunteer activities, health care costs (doctors visits, emergency room visits) and medication costs (Birse, 1994). In addition, Birse (1994) also noted the personal costs of decreased family recreation and social activities, isolation and interpersonal relationship difficulties. Due to this prevalence and the financial and social costs of chronic pain on a societal and individual level it is important to understand the process and intricacies of chronic pain and rehabilitation.

As a move from theory driven research about the rehabilitation process, Knish and Calder (1999) provided an analysis of the experience of rehabilitation for people experiencing chronic pain. This approach differed from most research in the area because it provided an opportunity to analyze the actual experience of people with chronic pain in a more expansive, unrestricted manner. Interestingly they found that the experience of men with lower back pain clustered into seven groups: Denial/Regret, Self-Defeating/Passive, Medication Use/Pain Focus, Cautious Realism, Accepting Limitations, Adaptive Coping, and Responsibility for Rehabilitation. However, the belief

literature in the area of chronic pain tends to address Self-Defeating/Passive (Linton, Buer, Vlaeyen & Hellsing, 2000), Medication Use/Pain Focus (Gonzales, Marelli & Baker, 2000; Kulrich & Baker, 1998), and Accepting Limitations (Dembo, Leviton & Wright, 1956). Thus, leaving four of the seven alternative themes unaddressed in the current literature base: Denial/Regret, Cautious Realism, Adaptive Coping and Responsibility for Rehabilitation.

As well, Knish and Calder (1999) related their findings to a progression of phases throughout the rehabilitation process. This hypothesis aligns with Fisher, Goldstein and Buongiorno's (1990) clinical recognition of a progression of symptoms that align with a rehabilitation pattern. Together, these studies propose that the process of chronic pain and rehabilitation can be mapped and analyzed so as to increase efficacy of treatment. The proposal of a rehabilitation process that can be mapped and predicted has intuitive and clinical appeal. However, as with any new approach, there exists a need to validate the findings prior to implementation. This validation process is critical to understanding the experience of chronic pain and how to organize and create effective programs of rehabilitation.

Therefore, the purpose of this project is to validate an instrument that is derived from the client's experience to aid in understanding the process of rehabilitation: The Experience of Rehabilitation Questionnaire (TERQ). The TERQ assesses what themes are most prevalent in the client's experience: Denial/Regret, Self-Defeating/Passive, Medication Use/Pain Focus, Cautious Realism, Accepting Limitations, Adaptive Coping, and/or Responsibility for Rehabilitation. Specifically, this research will address and add to the current literature through validating a new, alternative view of rehabilitation for

chronic pain. It will increase understanding of the experience of chronic pain and identification, and possibly resolution, of the factors that facilitate or hinder durable return to work. It may aid in the development and evaluation of programs to overcome barriers to return to employment, through improving both the practitioner and client's view of their internal process and progression of chronic pain. Finally, this research promises to aid in the identification of best practices through the validation of a new evaluative tool that can help address the needs and state of the client more effectively, thus improving rehabilitation outcomes and reducing barriers to successful return to work for clients.

Chapter 2: Literature Review

Major Historical Chronic Pain Theories

Conceptualization of pain has its roots in philosophy, from Aristotle to Descartes. From this early origination, many different models explicating the roots and process of chronic pain have arisen. Many theories of pain have been postulated. Novy, Nelson, Francis and Turk (1995) summarized the literature on theories of pain and concluded that there are eight theoretical perspectives, four of which are restrictive and four are comprehensive. The four restrictive theoretical perspectives are mind-body dualism, psychological, radical operant-behavioral, and radical cognitive. The four comprehensive theories are International Association for the Study of Pain (IASP), gate control, nonradical operant-behavioral, and cognitive behavioral.

Mind-body dualism. Descartes (1664, cited in Melzack & Wall, 1965) postulated that the experience of pain is directly correlated to the amount of physical stimulation. Further elaboration on this orientation was labeled "specificity theory" which indicates the underlying belief that a specific neural pathway is responsible for the experience of pain (Melzack & Wall, 1988). Thus, this orientation postulated that management of pain would consist of removing the noxious stimuli or blocking the neural pathway transmitting the pain impulse. However, research has not supported the hypothesis of a single neural pathway. For example, phantom limb pain occurs without physical sensation of the nerves or skin, nerve block therapies have failed to produce long-term reductions in the experience of pain (Turk, Meichenbaum & Genest, 1983). Further, as Birse (1994) summarized, this theoretical orientation "did not consider that the quality

and intensity of pain was influenced by a number of psychological and environmental factors" (p. 88).

In reaction to these disconfirming results pattern theory arose (Goldscheider, 1894, cited in Melzack & Wall, 1988). Pattern theory proposed that pain is experienced as a result of stimulation of patterns of nerve impulses at the dorsal horn and spinal cord. Therefore, the degree of stimulus intensity and the nature of central summation of sensory input creates the experience of pain. Although research into pattern theory has aided in clarifying how pain is transmitted through nerve fibers it has not provided a new direction in pain management (Birse, 1994).

Psychological. As a diametric opposite, the psychological orientation does not focus on the body, as specificity and pattern theories do, but rather on the mind. The foundation of this orientation can be linked to Aristotle's belief that pain was an emotion: The experience of pain was the opposite of pleasure. This perspective highlights that a person can be predisposed to develop pain due to intrinsic personality factors. More recently, Blumer and Heilbronn (1981) refined this perspective to define pain as an aspect of depression. This orientation has aided in highlighting psychological factors, which were de-emphasized within the physiological perspectives. However, research into this orientation has not been supportive. In fact, Turk and Salovey (1984) thoroughly examined the literature defining chronic pain as a form of depression and found that the logic underlying the pain-prone personality is flawed and circular. As well, they reported that the empirical evidence they reviewed was not methodologically sound:

> "They determined the purported empirical support to be retrospective in nature, and based on small sample sizes, with the dependent variables questionably

> operationalized, the data analyzed by inappropriate statistical methods, and the results subject to alternative and potentially more parsimonious explanations" (Novy, Nelson, Francis, et al., 1995, p. 240).

However, the research has indicated that depression and chronic pain often coexist and therefore, treatment for depression can also be of benefit in reducing chronic pain.

Radical operant-behavioral. Callie (1913, as cited in Turk & Rudy, 1986) noted that environmental factors effect the experience of pain. More recently, Rachlin (1985) posited that chronic pain is the result of reinforcement of pain behaviors (nonverbal behavior, verbalizations and cognitions). According to Novy, Nelson, Francis, et al. (1995) the limitation to this conceptualization of chronic pain is that it cannot account for correlations between behavior, affect, cognitive and physiological aspects of pain.

Radical cognitive. Ciccone and Grzesiak (1984), on the other hand, hypothesized that chronic pain is related to dysfunctional thought patterns. Although an interesting position, it reduces the complexity of chronic pain too simplistically (Novy, Nelson, Francis, et al., 1995). For example, this view does not explain how treatment modalities that do not target cognitions (such as neural stimulation techniques and pharmacology) have positive effects.

International Association for the Study of Pain's definition of pain. Merskey (1978) definition of chronic pain reflects this model; He formulated that pain is an "unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (Gonzales, Martelli & Baker, 2000, p. 69). Although not intended to be a theoretical orientation it has become the cornerstone

for many current clinicians and researchers. However, it does not explain the interrelationship between physiological and emotional experience.

Gate control theory. Melzack and Wall's Gate Control theory of pain, proposed in 1965, was one of the first theories to recognize both the psychological and the physiological aspects of the experience of pain (Melzack & Wall, 1965). This theory has inspired a great deal of research and provides a comprehensive summary of the complexities of chronic pain (Novy, Nelson, Francis, et al., 1995). Its most valuable contribution has been its emphasis on the central nervous system as a mediator in the experience of chronic pain (Melzack, 1999). Melzack's current extension of the Gate Control Theory to include aspects of stress theory is called the Neuromatrix theory (Turk & Monarch, 2002). This theory proposes that neural networks that can be triggered by physical, psychological and social events mediate the experience of pain. However, it requires further empirical scrutiny to determine its adequacy.

Nonradical operant-behavioral. Fordyce (1978) amended Merskey's (1978) definition to define chronic pain as "an unpleasant experience which we primarily associate with tissue damage or describe in terms of tissue damage or both, and the presence of which is signaled by some form of visible or audible behavior" (p. 54), which are open to the principles of operant conditioning. This theory is comprehensive in its applicability but it requires further explicitness in explaining the intercorrelation between different facets the experience of chronic pain before it can be empirically tested (Novy, Nelson, Francis, et al., 1995).

Cognitive-behavioral. This orientation acknowledges affect, behavioral, cognitive and physiological experience. It places emphasis on the role of beliefs in interpreting

physical sensation. In application this orientation focuses treatment on increasing the person's sense of control over the effects of chronic pain and decreases catastrophizing cognitions. As with the other comprehensive theories, this theory is comprehensive in its applicability but it requires further explicitness in explaining the intercorrelation between different facets the experience of chronic pain before it can be empirically tested (Novy, Nelson, Francis, et al., 1995).

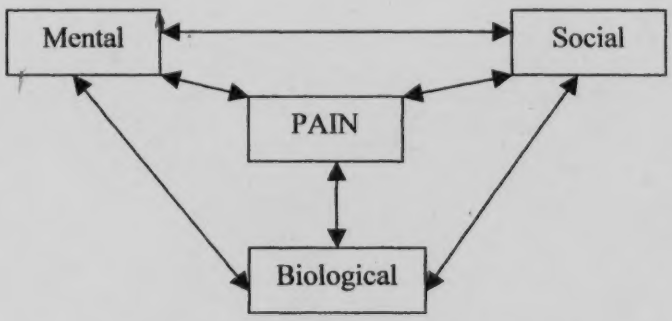
Overview of Chronic Pain Theories and Current View

Despite its shortcomings, the core of mind-body dualism is still one of the primary models of chronic pain in the medical field. This medical model hinges on the assumption that "the solution to a pain problem is to treat the underlying medical condition whereupon pain will resolve" (Nicholson, 2000, p. 58). Therefore, the medical definition of chronic pain is pain that persists beyond the normal healing time (King, 2000).

However, it has been noted that not every person with similar injuries develops persistent pain after the acute healing time (King, 2000). As well, Novy, Nelson, Francis, et al. (1995) concluded that a sufficient theory conceptualizing chronic pain must include and explain the interaction between sensory, cognitive, affective and behavioral aspects of the experience. And, as Aldrich, Eccleston and Crombez (2000) added, there also needs to be a recognition and integration of the dynamic nature of these aspects of experience. Thus, a model that recognizes and integrates the multiple factors that lead to the origin, influence the progression, and effect the rehabilitation of chronic pain needs to be developed.

Biopsychosocial perspective. The closest current theoretical orientation that embodies these characteristics is the biopsychosocial perspective. Melzack's work (1975, 1999; and Melzack & Wall, 1965, 1988) and the work of Merskey (1978) and Merskey and Bogduk (1994) embody the biopsychosocial model. This model is widely accepted and it succeeds in identifying the multiple aspects involved in the origin of chronic pain (Birket-Smith, 2001; Turk & Monarch, 2002). This perspective focuses on situational and trait variables that influence the biological, social and mental determinants of pain that become sensitized to the interpretation of pain symptoms (see Figure 1).

Figure 1: The biopsychosocial model of chronic pain.



Note. From: "Somatization and chronic pain," by M. Birket-Smith, 2001, *Acta Anaesthesiologica Scandinavica, 49*, p. 1118.

As Nicholson (2000) noted, this biopsychosocial, more subjective perspective has become pervasive in our current understanding of the experience of chronic pain. In fact, it has influenced how we define the experience of chronic pain. It has lead a movement

from the primary physician working in isolation to multidisciplinary teams that formulate treatment plans to achieve treatment goals that highlight psychosocial aspects of pain in addition to the physical. The teams consist of physicians, physiotherapists, occupational therapists, recreational therapists and psychologists.

In fact, Nicholson (2000) noted that it has been has become a standard assumption in rehabilitation programs that psychological factors are more influential than the actual physicality of the injury or reason for the current symptoms of pain. According to Slater, Hall, Atkinson and Garfin (1991):

> Attitudes and beliefs about pain and impairment are frequently the targets of cognitive-behavioral approaches to the treatment of chronic pain syndromes.... [These] treatment techniques attempt to: (1) reduce the degree to which patients attend to their pain, (2) increase patients' functional capacities, and (3) reduce the emotional distress and suffering related to pain and impairment. Treatment typically includes restructuring cognitive schema that may perpetuate excessive pain and disability. Beliefs about the meaning of pain and one's ability to function despite discomfort are important aspects of this cognitive schema that is typically a target for intervention. (p. 51).

Psychological Assessment of Coping

Thus, a key element of the biopsychosocial perspective is cognitions. Cognitions are understood as not simply the by-product of pain, but rather they are an integral aspect of the experience of chronic pain (DeGood & Shutty, 1992). The biopsychosocial perspective has lead to the integration of psychological assessment into the intake procedures of many chronic pain rehabilitation centers (Kulrich & Baker, 1998). The

primary goal of psychological assessment is to aid in effective program planning to reach rehabilitation goals of improving function, decreasing pain and improving quality of life (Kulrich & Baker, 1998).

Some widely used cognitive belief assessment tools include: Gottlieb's Pain Beliefs Questionnaire, developed in 1984 (Edwards, Pearce, Turner-Stokes & Jones, 1992, p. 267), Cognitive Error Questionnaire (CEQ) (Lefebvre, 1981), Pain Cognitions Questionnaire (PCQ) (Boston, Pearce & Richardson, 1990), and Chronic Pain Coping Inventory (CPCI) (Jensen, Turner, Romano & Strom, 1995). There are also tools to measure how people's thoughts influence their coping, such as the Ways of Coping Questionnaire (WOC) (Folkman & Lazarus, 1980), Coping Strategies Questionnaire (CSQ) (Rosenstiel & Keefe, 1983), and the Pain Stages of Change Questionnaire (PSCQ) (Kerns, Rosenberg, Jamison, Caudill & Haythornthwaite, 1997). For a more detailed analysis of current belief and coping strategies assessment tools see DeGood & Shutty's chapter entitled Assessment of pain beliefs, coping, and self-efficacy in Turk and Melzack's *Handbook of Pain Assessment* (1992).

One problem that has been noted with current assessment tools is that scores on commonly used instruments denote pain intensity and affective distress but not necessarily an individual's idiosyncratic responses to pain (Holyroyd et al., 1992). In fact, there are few validated instruments that focus on assessing an individual's idiosyncratic response to pain, such as the client's beliefs about their pain and its effect on function and daily living (Slater et al., 1991). Thus, a measure that offers insight into the unique aspects of an individual's experience of pain is needed.

In addition to a lack of sufficient content, it does appear that most of the instruments available at this time are not sufficiently validated. In a review of the literature regarding the validation of these commonly used questionnaires, the overriding theme is that "there is clearly a need for a validated measure of change in chronic pain over time" (Elliott, Smith, Cairns-Smith & Chambers, 2000, p. 303).

Considering the role that assessment procedures take in rehabilitation program intake and planning it is expected that these instrumental flaws may impact the measurement of outcomes in terms of quality of life gains. Better assessment tools would be sensitive to psychological treatment gains, in addition to behavioral changes in chronic pain over time. A further review of the literature has confirmed that treatment programs tend to focus on improving functional capacity but there tends to be a lack of effective treatment programs in regards to improving quality of life and mood. For example, a review of studies examining the efficacy of multidisciplinary treatment programs for people with chronic pain have illustrated that functional improvements can be made through multidisciplinary treatment programs but these programs are extremely expensive (Guzman et al., 2001, p. 1514). While, Crook, Weir and Tunks (1989) noted that an estimated 82% of patients continue to suffer with chronic pain after two years post-treatment. This unfortunate reality highlights the importance of improved treatment planning and focus to create long-term rehabilitation effects in terms of function and quality of life in a manner that reduces financial costs.

Perhaps one of the factors that has led to the poor psychological outcome findings for multidisciplinary programs for the treatment of chronic pain has been the limited amount of research in factoring the relative influence of medical, physical, situational and

trait variables on the expression and maintenance of the experience of pain symptoms. As well, the research that has been completed into these variables has been conducted with instruments derived from expert opinion and not the actual experience of people with chronic pain (Philips, 1989). For example, as Philips (1989) noted, "little systematic information has been collected on the varied cognitive reactions of pain sufferers to pain increment" (p. 469). It is proposed that improved assessment methods that reliably and validly quantify the experience of pain and rehabilitation would allow for improved effectiveness and outcomes for these programs through increasing understanding between client and therapist/physician and validating the idiosyncrasies of each client's experience of pain and its effect on his/her life.

Honouring the Experience of Pain

In his landmark study that began the process of examining the experience of pain, Philips (1989) utilized Bakal's Headache Assessment Questionnaire, developed in 1982, to clarify the beliefs of people with chronic pain in reaction to pain. He found that the results clustered into 7 themes: positive coping, desire to withdraw, disappointment with self, causal rumination, helplessness, concern about the effects of pain, and emotional reactivity. This questionnaire aided in determining some of the types of maladaptive thinking patterns clients engage in and "confirmed the suggestion made by Penzien [Holroyd, Holm and Hursey in 1985] that the cognitions of chronic pain sufferers are heterogeneous, and would benefit from subdivision" (Philips, 1989, p. 472). Philips (1989) also noted that "a more accurate method of assessing the thoughts of chronic pain patients, prior to treatment, would guide and focus cognitive approaches and allow for evaluation of cognitive changes as a result of treatment" to help decrease avoidance

behavior that is common in people with chronic pain (p. 469). However, since this time "it appears that little opportunity has been provided for chronic pain sufferers to describe their experiences in a way that was unrestricted by investigator's preconceptions" (Knish & Calder, 1999, p. 165).

In fact it has been noted that it is not further exploration into a clinician's view on chronic pain that is needed, but rather the experiential view of the client. Price (1996) suggested that "getting inside the experience of …(chronic) illness may be key to understanding patient motivation, non-compliance with therapy and altered patterns of social engagement" (p. 275). "What we need to know is how people experience their pain in the existential context of their life and suffering and how pain bestows meaning on people's life" (Honkasalo, 2000, p.198). A few recent studies have focused on remedying this flaw in the current literature base.

As a move to a phenomenological view of chronic pain and the rehabilitation process, Knish and Calder (1999) and Walker, Holloway and Sofaer (1999) provided an analysis of the experience of people with chronic pain, specifically lower back pain. These approaches differed from most research in the area because it provided an opportunity to analyze the actual experience of people with chronic pain in a more expansive, unrestricted manner.

Walker et al. (1999) found in their qualitative analysis of the experience of people with lower back pain that five themes were identified that "tell the typical story of back pain": "The pain takes over," "Sense of loss," "In the system," "They don't understand," and "Coming to terms" (p. 621 & 622). As well, they noted that suppressed anger was a common theme within the people interviewed. This remarkable study focused on the

experience of pain and offered insight into how each individual client's pain influenced him/her. However, it did not offer a way to determine the relative influence of these factors on an individual's experience and did not offer an analysis of the treatment implications. Despite this shortcoming, this remarkable study highlights the importance of cognitions and the importance of being able to measure or assess the internal processes of clients to improve treatment efficacy.

Honouring the Experience of Rehabilitation

Knish and Calder's (1999) study addressed this gap in the literature through examining the process of rehabilitation not just the experience of pain. They examined the experience of male chronic pain sufferers using qualitative and quantitative methods to determine if men with chronic pain have a common set of beliefs about their condition and what, if any, these beliefs look like. Through concept mapping Knish and Calder (1999) found that men suffering with chronic pain (low back), as a group, hold a set of beliefs related to their condition (see Appendix A). However, the beliefs identified in this study (cf. Walker et al., 1999) also appear to incorporate aspects of rehabilitation and movement beyond anger, which is present in Denial/Regret, Self-Defeating/Passive and Medication Use/Pain Focus.

Knish and Calder (1999) found that the experience of men with lower back pain clustered into seven themes: Denial/Regret, Self-Defeating/Passive, Medication Use/Pain Focus, Cautious Realism, Accepting Limitations, Adaptive Coping, and Responsibility for Rehabilitation. As well, they noted that their study created a "concept map [that] can be interpreted to suggest a model that asserts individuals hold different beliefs along the

way to being rehabilitated (p. 165) (see Figure 2). It is proposed that the seven themes outline phases of beliefs that characterize the progression of rehabilitation.

Figure 2: The Experience of Rehabilitation Map.

Note. From *Concept mapping the beliefs of chronic low back pain sufferers* (p. 138), by S. Knish, 1994, Unpublished doctoral dissertation, University of Alberta, Canada. Reprinted with permission.

Denial/Regret. The first proposed phase in this process of rehabilitation is Denial/Regret, which is hypothesized to represented denial and regret about the injury (Knish & Calder, 1999). The authors noted that the items in this cluster had a tendency to fit into other areas of the map. Although beliefs with this type of thematic content have not been directly addressed in the belief literature, Buchbinder, Jolley and Wyatt (2001)

stated that there is evidence that staying active and/or resuming regular activities is more effective than rest in dealing with chronic pain. However, the placement and tone of the items that this theme contains indicates that there is an unidentified quality to the cognitions that assists in the client's perception of the pain and how the resumption and continuation of employment is attempted.

Ironically, Harvey and McGuire (2000) found that active suppression of pain-related thoughts through competing activities was helpful in managing pain. This finding reaffirms the basis of cognitive behavioral interventions that focus on distraction and engaging in competing tasks, but within the TERQ conceptualization of chronic pain it is hypothesized that denial activities that ignore the pain sensations are related to more inefficient pain management, while more pain-related focus and understanding is assumed to be related to better treatment outcomes and less invasive lifestyle interference.

The affective dimension of this theme, regret, has also not been directly addressed in the literature. However, Aronoff and Rutrick (1985) indicated that pain might be conceptualized as a compromise between internal drives and external demands. As well, Alexander (1950) indicated that the inability to handle anger is the crux of chronic pain conditions. Perhaps this theme aligns with the research findings that people with chronic pain tend to deny emotional and interpersonal distress, experience guilt and depression, show an inability to deal with anger and hostility, sacrifice themselves to serve others.

Thus, the regret dimension is hypothesized to qualify the beliefs underlying the denial of the pain. In fact, Walker, Akinsanya, Davis and Marcer (1990) noted that in elderly clients it is important to assess past regrets to help increase the amount of

perceived control a person has over his/her pain. So, the affective component of regret adds another dimension to our understanding of the process of rehabilitation. Further, the findings of Harvey and McGuire (2000) reflect the importance of the process of pain management in that denial and regret of the symptoms is not effective, while active thought suppression of pain related thoughts after developing a respect and integration of the symptoms into a lifestyle where pain management is possible can be effective. However, the Harvey and McGuire (2000) study did not explicate the types of thoughts that participants were having and therefore it is difficult, within this study, to ascertain if the relationship between pain related thoughts and pain management is similar to that proposed within this theme of the TERQ and found by Walker et al. (1990).

Self-Defeating/Passive. The second hypothesized phase is Self-Defeating Passive. Knish and Calder (1999) noted that the items in this cluster had a tendency to fit into other areas of the map. Passive coping strategies are associated with the externalization of responsibility and increased negative effects on daily functioning (Snow-Turek, Norris & Tan, 1996) and prolonged work restrictions (Fritz & George, 2002). In addition, the Self-Defeating/Passive theme appears to be closely related to cognitive models that incorporate depression, catastrophizing, the presence of pain behavior and disability (Linton, Buer, Vlaeyen & Hellsing, 2000).

In fact, the incidence of depression in people with chronic pain has been shown to be quite high (Gamsa & Vikis-Freibergs, 1991). Therefore, cognitive beliefs in the form of externalizing affect (feeling like they have no control over their life) and feeling like the pain is interfering with their life are significant factors in the occurrence and maintenance of depression in people with chronic pain (Kulrich & Baker, 1998).

However, it has been noted that depression in conjunction with chronic pain is qualitatively different than depression in the absence of chronic pain (Pincus & Morley, 2001). The differentiating factor appears to be that chronic pain clients tend to lack the self-depreciating element typical of non-pain-related depression (Morley, Williams & Black, 2002; Pincus & Morley, 2001). Therefore, a measure of depression that accurately assesses depression, as experienced with chronic pain, would allow for more specialized treatment.

The item content of this theme is also characterized by anxiety and fears of having or getting a serious disease despite reassurance that there is no evidence to support the concern (Knish & Calder, 1999). For example, clients who have catastrophizing cognitions tend to "develop fear and anxiety concerning movements and this generates avoidance which in turn results in dysfunction and depression" (Linton et al., 2000, p. 1052). A representative cognition from Knish and Calder (1999) that exemplifies these thoughts is: "I think I can become paralyzed because of the injury". Further, these hyperchondriacal tendencies tend to be correlated with depression and catastrophizing (Hadjistavropoulos, Craig & Hadjistavropoulos, 1998).

It has been noted that anxiety and these hyperchondriacal tendencies, passive coping strategies and negative beliefs about pain are associated with poorer treatment outcome and increased disruption in the client's life and functioning (Mellegard, Grossi & Soares, 2001; Zvolensky, Goodie, McNeil, Sperry & Sorrell, 2001; Hadjistavropoulos & Asmundson, 1998; Edwards et al., 1992). Further, this anxious approach has been linked to depression (Zvolensky et al., 2001). As well, the use of avoidance of activities and rest as a coping strategy is associated with worse physical function (Linton et al.,

2000; Jensen, Turner, Romano & Strom, 1995). An example of this approach is the belief that "When I am having a pain flare-up I need it to stop immediately" (Knish & Calder, 1999, p. 169). This strategy of pain management can lead to negative consequences in terms of deconditioning and an increase in the subjective experience of pain (McCracken, 1998). In fact, Kulrich & Baker (1998) reported that, "from a psychophysiological standpoint, [such] anxiety can lower the pain threshold, so that the patient interprets a range of sensations as painful" (p. 303).

However, as Hadjistavropoulos and Asmundson (1998) noted there are not many valid measures for hyperchondriacal tendencies with chronic pain, but stated that research has indicated that these beliefs are an important factor in the experience of chronic pain and relate to its progression and impact. Therefore a measure that incorporates and adds this set of beliefs to its scale would be valuable to treatment planning. Thus, this theme of the TERQ would fill the gap in the current assessment tools.

Medication Use/Pain Focus. The third phase is Medication Use/Pain Focus, which contains the fewest items. The thematic content appears to be belief statements that highlight the primary role that medications play in the experience of and adjustment to life with chronic pain (Knish & Calder, 1999). These authors described this group of beliefs as adaptive. However, Kulrich and Baker (1998) noted that pain-focused beliefs "may [make the client] seek out multiple concurrent treatments without benefit" and "the chronic disability and recurrent course of chronic pain may reinforce this somatic focus, with the patient's worry and somatic concern reinforced by multiple unsuccessful intervention strategies aimed at pain relief" (p. 304).

Gonzales, Marelli and Baker (2000) noted that medication does not address coping skills and, therefore, perhaps clients who are at this stage in the progression of their pain are also not focused on coping with their pain and learning coping skills. It may also indicate an external locus of control, whereby only the physicians and medications can control the pain that the person experiences because the pain is unpredictable and out of the person's control (Kulrich & Baker, 1998). Clients who have a pain focus have been found to have higher pain ratings and have been labeled by rehabilitation professionals as "symptom magnifiers" and it has been noted that there may be additional factors that are covertly reinforcing pain behavior (Kulrich & Baker, 1998, p. 304). Therefore, it would be expected that if this theme measures symptom magnification then clients at this stage would have higher pain ratings.

Cautious Realism. Fourth in the progression is Cautious Realism. Knish and Calder (1999) noted that "based on its region on the map, [Cautious Realism] may be representative of a transition phase in the rehabilitation process where individuals move from a more negative self-defeating set of thoughts and beliefs to ones that are adaptive, more specific to coping and behaviorally oriented" (p. 173). It has been reported in the literature that people who avoid catastrophizing, believe that they can control their pain and believe that they are not severely disabled have better treatment outcomes (Kulrich & Baker, 1998). This theme is proposed to measure a movement from an external control by the medical professionals towards personal control, where the person begins to take more personal responsibility for his or her pain. A sense of control over pain symptoms has been found to be indicative of more positive treatment outcomes (Kulrich & Baker, 1998; Reynolds, 1999).

The Cautious Realism theme appears to have a neutral valence and has not been addressed in the chronic pain or belief literature. However, an examination of the items included in this theme indicates that there is an absence of the fear-based cognitions that characterized earlier themes. As Jamison and Brown (1991) noted, "reduced fear and anxiety associated with the … appraisal of the pain may influence the …experience of pain" (p. 127). It is hypothesized that the reduction in this fear element perhaps allows the client to see some predictability in their pain rather than viewing it as a capricious force.

Accepting Limitations. The fifth phase in the progression is Accepting Limitations. Knish and Calder (1999) noted that this cluster contains items related to accommodation, specifically in regards to physical and psychological functioning. This cluster also contains items that indicate a shift to a belief that medication use is not a long-term solution and only acts to mask the symptoms. This thematic shift in beliefs has been addressed for many years in the literature. In fact, Dembo, Leviton and Wright (1956), noted that:

> The acceptance of loss is a process of value changes. The extent of acceptance of disability is associated with the degree that a person (a) recognizes values other than those that are in direct conflict with the disability; (b) deemphasizes those aspects of physical ability and appearance that contradict his or her disabling condition; (c) does not extend his or her handicap beyond actual physical impairment to other aspects of the functioning self; and (d) does not compare himself or herself to others in the area of limitations but instead emphasizes his or her own assets and abilities. (p.45)

This confirms the hypothesis that the Accepting Limitations theme addresses a value change that is necessary for adjustment and is likely positively correlated with better outcomes for rehabilitation (Li & Moore, 1998).

However, Li and Moore (1998) found that people without chronic pain were more likely to accept their disability than those with chronic pain and those whose pain is a result of congenital factors. The authors' hypothesized that this is because it takes a longer period of time for the individual and his or her family to adjust to a disability. But, acceptance of the pain is not an area that has been researched thoroughly (McCracken, 1998). In fact, McCracken (1998) noted that only one unpublished doctoral dissertation addressed this aspect of the experience of chronic pain prior to his study (see Geiser, 1992). McCracken rationally derived questions to assess his conceptualization of acceptance as "acknowledging that one has pain, giving up unproductive attempts to control pain, acting as if pain does not necessarily imply disability, and being able to commit one's efforts toward living a satisfying life despite pain" (p. 22) (see Table 1).

The lack of current research addressing this theme exemplifies the medical model of rehabilitation that focuses on physical findings and functional improvement. However, a shift in the core beliefs about disability that characterize these beliefs offers a way to measure movement forward in terms of rehabilitation even without the physical outcomes. Thus, this theme appears similar to Adaptive Coping and is hypothesized to document a shift from non-adaptive beliefs to more adaptive beliefs, which will translate to behavior in the next phase (Knish and Calder, 1999).

Table 1: Sample items from the Chronic Pain Acceptance Questionnaire (CPAQ)

Sample items from the Chronic Pain Acceptance Questionnaire (CPAC)
I am getting on with the business of living no matter what my level of pain is.
It's OK to experience pain.
It's not necessary for me to control my pain in order to handle my life well.
I've decided the hassle of trying to get rid of this pain just isn't worth it; I'll live with it.
I've done my best to try to control my chronic pain, and it looks like it won't change.
Controlling pain is less important than many other goals in my life.
I can live with the idea that I will probably have pain for the rest of my life.
Despite the pain, I am now sticking to a certain course in my life.
I accept the fact that my basic pain level is not going to change in any lasting way.
It's a relief that I don't have to change my pain to get on with my life.

Note. From "Qualitative methods in psychology: A power primer," by L. M. McCracken, 1998, *Psychological Bulletin,* 12, p. 23.

Adaptive Coping. The sixth phase in the progression is Adaptive Coping. The Adaptive Coping theme relates to the literature base examining coping strategies of people with chronic pain (Knish & Calder, 1999). As previously mentioned, it does overlap with the Accepting Limitations theme, specifically in the realization that acceptance of limitations allows for adaptive coping. However, the content of this theme does differ from Accepting Limitations in regards to the active stance that accompanies it. There are specific statements that correspond to adaptive, solution-focused strategies for dealing with chronic pain. Knish and Calder (1999) noted that "although indirectly inherent in a number of scales developed that focus on self-efficacy, pain intrusion, and disability…it does not appear that these types of beliefs have been studies directly" (p. 174).

Responsibility for Rehabilitation. The final phase in the progression of rehabilitation also reflects adaptive coping activities buts adds specific physical tasks the

person can do that aid in the rehabilitation process and employment (Knish & Calder, 1999). This theme adds the evaluative component that emphasizes the individual's power in his or her own rehabilitation process that has not previously been addressed. However, despite research findings indicating that perceived personal control over pain symptoms is an important dimension that influences coping (Walker & Sofaer, 1998), there has not been a focus on this aspect of coping in rehabilitations.

As well, this theme's apparent relationship with maintenance of treatment benefits has been cited as an important oversight in the rehabilitation process. Specifically, treatment programs do not offer any after-program support to help each individual maintain the positive changes they achieved in the rehabilitation program (Reilly, 1994). Even though, it has been illustrated that a client's beliefs about the efficacy of the treatment program has a relationship with compliance with the treatment and maintenance of treatment gains (Kulrich & Baker, 1998).

Therefore, this theme of the TERQ is hypothesized to indicate adoption of the skills taught in rehabilitation and the beliefs about future applicability of these skills in pain management. The addition of this theme to assessment measures would aid in determining the relationship between the use of behavioral coping strategies, such as those taught in a rehabilitation program, and functional capacity. It would act as an excellent outcome measure to help direct individualized program planning (Jensen et al., 1995).

The TERQ as an instrument. The TERQ was developed after interviewing individuals in pain who had an injury (see Appendix B). As previously noted, a concept map of seven themes was derived from the results: Denial/Regret, Self-

Defeating/Passive, Medication Use/Pain Focus, Cautious Realism, Accepting Limitations, Adaptive Coping and Responsibility for Rehabilitation. Each theme was formulated into items, which consisted of a summary and 3 representative experience statements as examples. Each statement is accompanied with a 4-point Likert rating scale for the client to identify if they have had or are currently having similar thoughts or experiences. High scores reflect that the client has experienced similar thoughts, beliefs, feelings, or experiences as the theme. A low score means that the client has not had similar thoughts, beliefs, feelings, or experiences as the theme. In development it was proposed that the themes represented different thoughts and modes of coping that may follow and relate to the rehabilitation experience. Therefore, the TERQ assesses what themes are most characteristic of the client's experience.

Further, most instruments used with people who are experiencing chronic pain are valid for assessing current pain and not necessarily usual pain. This is because "current pain is not the same as usual pain" (Jensen & McFarland, 1993, p. 195). Therefore, the previous experience items on the TERQ are proposed to measure usual pain, while current experience items are proposed to measure current pain. Thus, the TERQ adds estimates of both current and usual pain, which is not measured in any commonly used instruments for assessing chronic pain. Through adding this dimension the TERQ would enable rehabilitation centers to assess both dimensions, which may increase treatment goal attainment, which is to decrease usual pain not just current pain.

As Brock and Kleiber (1994) stated, "When we are ill, we experience a fundamental doubt about the viability of the future self that we have envisioned for our life story" (p. 413). The process of grieving this loss and rehabilitation has been likened

to the stages of bereavement (Reynolds, 1999). The loss of functional capacity and quality of life changes create a void with the lives of clients. Therefore, according to the TERQ, in order to manage and deal with this loss there is a process of change and rehabilitation.

The current method to conceptualize this process of change and rehabilitation is the Stages of Change (Norcross & Prochaska, 2002). Norcross and Prochaska's model of change occurs in five stages: Precontemplation, Contemplation, Preparation, Action, and Maintenance. Precontemplation is characterized by minimal understanding of the exact nature of the problems and may be coupled with a desire for things to be different than they are. Contemplation brings an awareness of the problem and thoughts about changing it. Preparation may bring unsuccessful attempts at changing. Action is the stage of major change and movement toward a goal. The Contemplation and Preparation scales are closely related and therefore are at times referred to as just Contemplation (Jensen, Nielson, Romano, Hill & Turner, 2000). Finally, Maintenance is the consolidation of the change into a new way of being. These stages are not discrete and, as Norcross and Prochaska (2002) noted, "the pattern is a spiral rather than a circle" (p. 6). Each stage tends to have specific interventions that assist or hinder movement towards a goal, for example Precontemplaters may respond best to nurturing support and people in the Action stage tend to respond to enthusiastic coaches (Norcross & Prochaska, 2002). However, these authors consistently found that Precontemplation was associated with avoidance behavior, beliefs that physical pain is related to physical damage, and beliefs that the medical professional is responsible for decreasing the person's subjective

experience of pain. As well, the authors noted that a positive relationship was found between Action and Maintenance and client's use of exercise and relaxation techniques.

The Stages of Change perspective offers a positive, treatment-oriented way to view chronic pain. In addition, there is high face validity for a correlation between the Stage of Change and the TERQ. But research into the applicability of this stage model to people with chronic pain has found only weak to moderate associations (Jensen, Nielson, Romano, Hill & Turner, 2000). Therefore, using the Stages of Change as a foundation, the TERQ offers a way to measure, conceptualize and operationalized the process of change and rehabilitation to help create a framework for individualized treatment for each person with chronic pain. However, as illustrated through the literature review, the themes were not completely reducible to current theoretical formulations used to examine the association between beliefs and coping with chronic pain. As Knish and Calder (1999) noted:

> The need exists for future research to attempt to validate the themes identified in this study and examine the extent to which beliefs change throughout the rehabilitation process. Validation of the themes and their locations as stages in the rehabilitation process could lead to further examination to determine effective therapeutic tasks and treatment strategies for each stage in the process. In addition, the possible relationship between the themes and chronic low back pain sufferer's readiness for change could be investigated to aid in assessment and in the development of treatment plans. (Knish & Calder, 1999, p. 175)

Chapter 3: Purpose of Current Study

The purpose of this study is to determine the validity of the TERQ for use in measuring each of the thematic belief constructs. It is hypothesized that the TERQ measures different processes of coping beliefs in regards to chronic pain. The different themes are expected correlate with the stages of change in the direction of maladaptive to increasingly adaptive coping beliefs.

Themes

Since there does not exist any pain measure that is deemed the "gold standard" to compare other measures with, it was decided to compare the TERQ with a variety of pain belief measures (Jensen, Turner, Romano & Fisher, 1999, p. 158). Thus, to determine the validity of the themes the TERQ was compared with established coping scales, specifically the Coping Strategies Questionnaire (CSQ), the Beck Depression Inventory-II (BDI-II), the Pain Disability Index (PDI), and the Pain Stages of Change Questionnaire (PSCQ). See Table 2 for a summary of the hypotheses concerning how each theme should correlate with the chosen validity measures.

Table 2: Hypotheses for how each theme is expected to correlate with commonly used measures.

Themes from the TERQ	CSQ									BDI -II	PDI	PSCQ			
	Diverting Attention	Reinterpreting Pain Sensation	Coping Self Statement	Praying and Hoping	Ignoring Pain Sensation	Catastrophizing	Behavioral Coping Strategies	Control Over Pain	Ability to Decrease Pain	Total	Total	Precontemplation	Contemplation	Action	Maintenance
Denial/ Regret	+						+					+			
Self-Defeating/ Passive			-	+		+		-	-	+		+			
Medication Use/ Pain Focus		-			-						+	+			
Cautious Realism						-							+		
Accepting Limitations														+	
Adaptive Coping		+												+	
Responsibility for Rehabilitation			+					+	+						+

Note: + = hypothesized positive correlation; - = hypothesized negative correlation

Denial/Regret. This theme is hypothesized to correlate with Diverting Attention and Behavioral Coping Strategies on the CSQ because of the proposed negative valence and the denial of the pain. It may correlate with the Ignoring Pain Sensation on the CSQ but the research to date is equivocal; some findings have indicated that this theme correlates with more adaptive coping beliefs. Further, it should correlate with the Precontemplation stage on the PSCQ because this is the first stage in the Stages of Change model and the client is likely at this stage to express little interest in changing his/her behavior.

Self-Defeating/Passive. Mellegard et al. (2001) found that there was a correlation with this coping approach and higher scores on the Catastrophizing, Praying/Hoping, and Pain Behaviors subscales and with lower scores on for Self-Efficacy Beliefs on the CSQ. Therefore, this theme is hypothesized to correlate with the Praying and Hoping subcategory on the CSQ, which is inconsistent with adaptive coping beliefs. Further, given the proposed link to catastrophizing beliefs and depression it should correlate with the Catastrophizing theme on the CSQ and with the BDI-II. Further, it should correlate with the Precontemplation stage on the PSCQ because this is the first stage in the Stages of Change model and the client is likely at this stage to express little interest in changing his/her behavior. As well, this theme should not be correlated with any of the measures that are correlated with Responsibility for Rehabilitation if the thematic construct holds.

Medication Use/Pain Focus. This theme is hypothesized to correlate with the PDI-II because of the physical orientation towards pain symptoms. As well, this theme should correlate with the Precontemplation stage of the PSCQ because of the lack on internal control beliefs. At this point the focus of the client's beliefs hinge on

conceptualizing their pain as a medical condition for which the responsibility for management lies with the medical professionals. As well, it should negatively correlate with Reinterpreting Pain Sensation and Ignoring Pain Sensation on the CSQ because of the somatic focus.

Cautious Realism. Given that this theme appears to have not been addressed in the current literature base it is unknown how it will correlate with the instruments chosen. It is hypothesized that it may correlate with the Contemplation stage on the PSCQ because of the change in values but not necessarily a change in behavior that characterizes both Cautious Realism and Precontemplation.

Accepting Limitations. This theme is hypothesized to correlate with the Contemplation stage on the PSCQ because of the proposed shift in value beliefs about personal control over pain.

Adaptive Coping. This theme is hypothesized to correlate with Reinterpreting Pain Sensation on the CSQ because of the shift to adaptive interpretations of pain and beliefs about personal control. This theme should also correlate with the Action stage on the PSCQ because of the movement towards personal responsibility.

Responsibility for Rehabilitation. This theme is hypothesized to correlate with Coping Self-Statements, Control over Pain and Ability to Decrease Pain on the CSQ because of the shared adaptive coping beliefs. As well, it may correlate with the Maintenance stage on the PSCQ because this is the stage where the individual works to maintain the changes he/she has made. Within the PSCQ the items reflect the acceptance of a self-management strategy and also include beliefs about continued application of learned and new self-management techniques. Therefore, in terms of their acceptance of

their pain as chronic, whether an individual feels their pain is subject to management, rather than needing to be cured.

TERQ as an instrument

One standard that all measures must meet as outlined by the American Educational Research Association (1985) is to demonstrate that the instrument is valid for the purpose for which it is intended. In pain research the instrument "must show changes when change is expected…[and] show sensitivity to treatment effects" (Jensen, Turner, Romano & Fisher, 1999, p. 158). Thus, the TERQ must illustrate validity and show sensitivity to treatment effects. Therefore, through comparing the results of the questions that sample current experience and the questions that sample past experiences and beliefs, information is obtained on both how people experience current pain and their pain's influence on their life overall. Thus, indicating if beliefs about personal efficacy in the self-management of pain have shifted to more adaptive themes. This illustrates treatment sensitivity.

As well, considering that most scales have been developed for use with one population (Hadjistavropoulos, Asmundson & Norton, 1998), the generalizability of the TERQ will be examined. Specifically, it has been noted that men and women, and people with pain at other sites other than the back, respond differently to the experience of pain (Fillingim, Maixner, Kincaid, & Silva, 1998). In addition, a great deal of literature about chronic pain has suggested that the intensity of pain and age are important dependant variables (Walker & Sofaer, 1998). Therefore, since the TERQ was developed from a concept map of the experience of a small sample of men with lower back pain (Knish &

Calder, 1999), it must demonstrate that it is generalizable to women with chronic pain, other pain sites, pain types, intensity levels and across ages.

Chapter 4: Method

Subjects

Participants from the WCB Millard Centre Pain Management Program, based in Edmonton, Alberta, volunteered to complete the TERQ as part of an intake and discharge battery of questionnaires. The questionnaires were given to 124 consecutive admissions. One hundred of the 124 participants completed the TERQ along with the other intake questionnaires, 46 participants completed the TERQ along with the other discharge questionnaires, and 32 completed the TERQ along with the other questionnaires on both intake and discharge. Since the questions on the TERQ formed the Independent Variables, the sample was reduced through deleting cases that did not complete the TERQ, at either intake or discharge. Therefore, one hundred (N_{pr}=100) chronic pain clients completed the battery of questionnaires on intake—PR group—and forty-six (N_{ps}=46) completed the battery of questionnaires at discharge—PS group. Of these participants thirty-two (N_{pp}=32) completed the battery at both intake and discharge—PP group. Demographic data are summarized in Table 3.

Table 3: Descriptive data for demographics of participants in each group.

Feature	PR group N_{pr}=100	PS group N_{ps}= 46	PP group N_{pp}= 32
AGE			
Mean	42.77	42.33	43.91
Standard deviation	8.461	8.284	7.685
Range	24-66	21-56	27-56
GENDER (%)			
Male	69	70.8	71.9
Female	31	29.2	28.1
PRIMARY LANGUAGE (%)			
English	92	93.4	93.8
French	3	2.1	3.1
Other	5	4.2	6.3
MARITAL STATUS (%)			
Married	50	52.2	50.0
Divorced	12	8.3	9.4
Separated	4	6.3	6.3
Single	18	16.7	15.6
Common-law	14	14.6	18.8
Not stated	2	0	0
EDUCATION (%)			
Grade 8 or less	17	12.5	18.8
Partial High School	31	28.3	28.1
High school	21	27.1	25.0
Partial Technical or trade school	8	10.4	9.4
Technical or trade school	16	14.6	12.5
Some university	3	3.1	3.1
Degree	2	0	0
Not specified	2	2.1	3.1
EMPLOYMENT (%)			
Management	2	2.1	3.1
Business/Finance/Administration	1	0	0
Natural/Applied Sciences	3	4.2	3.1
Health Occupations	4	4.2	0
Art & Culture	2	0	0
Sales & Services	14	16.7	21.9
Trades/Transport/Equipment	54	56.5	56.3

Primary Industry	9	8.3	9.4
Processing/Manufacturing/Utilities	11	4.2	6.3
INCOME			
No income data	23%	27.3%	28.1%
Mean	$34,476.95	$34,355.89	$31,051.15
Standard deviation	$15,978.00	$17,160.08	$15,774.74
Range	$9,415.75 to $85,506.05	$9,415.75 to $80,841.00	$9,415.75 to $79,460.50
ADMISSION JOB ATTACHED (%)			
Yes	25	29.2	21.9
No	75	70.8	78.1
DISCHARGE JOB ATTACHED (%)			
Yes	20	18.8	15.6
No	80	81.3	84.4
DURATION OF PAIN (years)			
Mean	2.4	2.1	2.0
Standard deviation	2.6	2.6	2.3
Range	.17 to 20.5	.33 to 12.58	.25 to 12.00
PRIMARY PAIN REGION (%)			
Low Back	33	33.3	31.3
Head and Neck	9	10.4	9.4
Upper Limb	25	27.1	34.4
Lower Limbs	7	4.2	6.3
Diffuse (site not specified)	13	12.5	9.4
Hip	3	2.1	3.1
Sacroiliac Region	10	6.3	6.3
TYPE OF INJURY (%)			
Carpal Tunnel Syndrome	5	2.1	3.1
Fracture	14	16.7	18.8
Unspecified Injury	5	0	0
Lumbago	17	16.7	12.5
Rheumatism	11	12.5	15.6
Sprain &/or Strain	21	22.9	21.9
Whiplash	6	8.3	9.4
Pain/Dislocation of a joint	6	6.3	9.4
Displacement of Disc	6	2.1	3.1
Unspecified Neurotic Disorder	5	4.2	3.1

Other (Cervical Spondylosis, RSD, Tietze's disease, Radicular Symptoms)	4	2.1	3.1
Congenital	0	2.1	0
SECONDARY DIAGNOSIS (%)			
Degeneration/Displacement of Disc	13	12.5	18.8
Depression	4	2.1	3.1
Pain in Joint or another area	8	14.6	12.5
Personal history of pain	5	2.1	3.1
Presence of neuropacemaker or other electronic device	29	12.5	15.6
Rheumatism in another area	3	4.2	6.3
Sprain/Strain of another area	11	8.3	9.4
Whiplash	2	2.1	3.1
Adjustment reaction	1	0	0
Opiod abuse	1	0	0
Injury to another area	2	2.1	3.1
Other	4	6.3	9.4
None specified	17	29.2	18.8

Measures

Coping Strategies Questionnaire (CSQ). Rosenstiel and Keefe developed the CSQ in 1983 and it is one of the most frequently used measures of coping with chronic pain clients (Stewart, Harvey & Evans, 2001). It is a 50 item, rationally derived, self-report instrument designed to assess diverse coping strategies. Specifically, it assesses six cognitive and two behavioral coping strategies: Diverting Attention, Reinterpreting Pain Sensation, Coping Self-Statements, Ignoring Pain Sensations, Praying and Hoping, Catastrophizing, Increased Activity Level, and Increasing Pain Behaviors. The CSQ also contains two items that require the client to report perceived control over pain and ability to decrease pain. See Table 4 for an analysis of the meaning of each sub-theme in the CSQ.

Table 4: Themes of the Coping Strategies Questionnaire.

Coping Strategies Questionnaire	
Cognitive Coping Strategies	
Diverting Attention	Thinking of things that serve to distract one away form the pain
Reinterpreting Pain Sensations	Imagining something, which if real, would be inconsistent with the experience of pain
Coping Self-Statements	Telling oneself that one can cope with the pain, no matter how bad it gets
Ignoring Pain Sensations	Denying that the pain hurts or affects one in any way
Praying and Hoping	Telling oneself to hope and pray that the pain will get better someday
Catastrophizing	Negative self-statements, catastrophizing thoughts and ideation
Behavioral Coping Strategies	
Increasing Activity Level	Engaging in active behaviors which divert one's attention away from the pain
Increasing Pain Behavior	Overt pain behaviors that reduce pain sensations
Effectiveness ratings	
Control over pain	
Ability to decrease pain	

Note. From "The use of coping strategies in low-back pain patients: Relationship to patient characteristics and current adjustment," by A. K. Rosenstiel and F. J. Keefe, 1983, *Pain,* 17, p. 35.

The CSQ was chosen because it is considered to be the best inventory of cognitions related to chronic pain and a wide variety of coping strategies which are relevant to treatment outcomes (Lawson, Reesor, Keefe & Turner, 1990). As well, it appears to be applicable across a diverse range of pain populations (Lawson et al., 1990). The developers found that all of the scales had acceptable internal consistency except the Increasing Pain Behaviors scale (coefficient alpha = 0.28) (Rosenstiel & Keefe, 1983).

The test-retest reliabilities for the subscales range from 0.68 to 0.91 (Main & Waddell, 1991).

The correlational findings with the CSQ subscales often offer inconsistent findings. For example, the Coping Self-Statements, Ignoring Pain Sensations, Increasing Activity, and Diverting Attention subscales are related to better adjustment in some studies but not others (Keefe et al., 1987; Rosenstiel & Keefe, 1983; Turner & Clancy, 1986). In fact, many other studies have also noted that the factor structure of the CSQ has not been supported by factor analytic findings except for the appraisal scale of the Catastrophizing sub-theme that has had robust findings supporting it (Main & Waddell, 1991; Stewart, Harvey & Evans, 2001).

Difficulties in finding appropriate comparison measures to determine construct validity of the subscales of the CSQ likely account for the inconsistent findings in various studies (Stewart et al., 2001). However, despite this weakness, the clinical utility of the CSQ is well established for assessing cognitive coping strategies rather than behavioral strategies (Hadjistavropoulos, MacLeod & Asmundson, 1999). As DeGood and Shutty (1992) noted, the difficulties with construct validity are not likely representative of instrumental difficulties with the CSQ but rather due to theoretical limitations of comparison instruments in their focus on behavioral changes.

Beck Depression Inventory-II (BDI-II). The BDI-II is a 21 item self-report questionnaire that evaluates twenty-one symptoms of depression, fifteen of which cover affect, four behavioral changes, and six somatic symptoms. The sub-scales are sadness, pessimism, sense of failure, dissatisfaction, guilt, expectation of punishment, self-dislike, self accusations, suicidal ideas, crying, irritability, social withdrawal, indecisiveness,

body image change, work retardation, insomnia, fatigability, anorexia, weight loss, somatic preoccupation and loss of libido. Each symptom is rated on a 4-point intensity scale and scores are added to give a total ranging from 0 to 63. Higher scores represent more severe depression. The BDI-II was originally designed to measure the depth and intensity of depression in psychiatric patients. It has subsequently been used as a community-screening instrument and for clinical research.

The BDI-II was chosen because it is widely accepted as the best measure of affective distress. However, it is recognized that the somatic content within the BDI-II may lead to false positives among a chronic pain population (Morley et al., 2002). Specifically, clients suffering from persistent pain have a marked tendency to report problems in the areas of work, sleep, fatigue, health concerns, irritability and dissatisfaction with daily life. The presence of those characteristics also appears to be the major reason why a high proportion of the chronic pain sample obtained high scores on the depression inventory (Gonzales et al., 2000). Despite this finding, the BDI-II has been reported to have high reliability and validity for chronic pain populations (Pearson product moment correlations ranging from 0.48 to 0.86 (Beck & Steer, 1987). These findings have been confirmed in recent studies as well (Morley et al., 2002; Novy, Nelson, Berry & Averill, 1995)

Pain Disability Index (PDI). The PDI was developed as a short, self-report instrument for measuring the degree of interference with normal role functioning caused by chronic pain. To complete the PDI, the client uses an 11-point scale ranging from 0 (no disability) to 10 (total disability) to rate the degree to which pain interferes with functioning in seven areas: family/home responsibilities, recreation, social activity,

occupation, sexual behavior, self care, and life-support activity. Summing the responses to the seven items creates the total score. Thus, a PDI score can range from 0 to 70. The higher scores correspond to greater disability and low scores indicate low disability. Several studies have provided support for the reliability and validity of the PDI (Cronbach's alpha of .86) (Chibnall & Tait, 1994; Pollard, 1984; Tait, Chibnall & Krause, 1990).

The PDI was chosen because studies indicate that it discriminates between high and low disability for chronic pain clients (Pollard, 1984). The limitations of the PDI are that it assumes the existence of chronic pain, it is a global measure rather than specific and it's "face-apparent" wording (Gonzales et al., 2000; Kerns & Jacobs, 1992, p. 244).

Pain Stages of Change Questionnaire (PSCQ). Kerns, Rosenberg, Jamison, Caudill and Haythornthwaite (1997) designed the PSCQ to measure an individual's readiness to adopt a self-management approach to their chronic pain condition. It is a 30 item self-report questionnaire and is scored on a 5-point Likert scale from strongly agree to strongly disagree. The inventory indicates which stage clients are in (Precontemplation, Contemplation, Action, or Maintenance). Each of the four areas was found to be internally consistent and reliable over time (Kerns et al., 1997).

The PSCQ was included because it specifically targets the shift in beliefs that is necessary to accept self-management. This tool helps to evaluate whether clients have adopted a self-management approach to their status as a result of clinical intervention. The PSCQ has satisfactory reliability and validity (alpha coefficients for the stages ranged from 0.77 to 0.88 and test re-test reliability ranged from .74 to .88; Kerns et al., 1997). However, it has been noted that the PSCQ can be used to predict program

completion but not in determining inclusion and exclusion criterion for program planning (Biller, Arnstein, Caudill, Federman & Guberman, 2000). These authors found that the PSCQ predicted those who would complete program 69% of the time and those who did not complete 72% of the time. But as these authors noted the PSCQ should not be used to determine program inclusion because if clients were enrolled based on this criteria 39% of those admitted would not complete the program and 35% of those not admitted would have completed the program. Therefore, it should only be used as a guideline to identify those clients that may need extra support to complete their rehabilitation programs.

Chapter 5: Procedure

Data Preparation and analysis

For the PR and PS groups a between subjects one-way analysis of covariance was performed on the 29 dependant variables to determine if the mean differences among participants with missing data and participants with no missing data are likely to have occurred by chance (see Table 5 for frequency of missing data within groups). For the PP group the analysis was performed on 58 dependant variables to include both intake and discharge administrations.

Table 5: Frequency of missing data within the groups.

	PR group		PS group		PP group	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
No missing data	79	79.0	34	73.9	20	62.5
Missing data	21	21.0	12	26.1	12	37.5
Total	100	100.0	46	100.0	32	100.0

Analyses were performed using SPSS ANOVA. To correct for the number of tests completed within the ANOVA the Bonferroni adjustment was utilized. This adjustment ensures that the results are not due to chance (Strong, Ashton & Chant, 1992). Therefore, for the PR and PS groups a significance level of .0017 is needed in order to reject the null hypothesis and for the PP group it was determined that a significance level of .00086 was needed in order to reject the null hypothesis. None of the F-values reached significance

levels and, therefore, we can conclude that there are no systematic differences between participants with missing data and those with complete data.

Statistical Procedures

Discriminant validity. To determine if each theme identified from the concept map measured different constructs, an analysis of "discriminant distinctiveness" was completed (Kerns, Turk & Rudy, 1985, p. 351). The intercorrelation matrix created determines if the scales measure unique constructs (Strong, Ashton & Chant, 1992). It is hypothesized that the scales measure unique constructs and will not be correlated with each other on intake or discharge in terms of previous or current experience.

Discriminant validity for treatment effects. In pain research the instrument "must show changes when change is expected…[and] show sensitivity to treatment effects" (Jensen, Turner, Romano & Fisher, 1999, p. 158). To determine the discriminant validity for treatment effects and assess the sensitivity of the TERQ to change in beliefs throughout the rehabilitation process an intercorrelation matrix was created correlating intake and discharge measures on the current and past experience items. It is expected that the previous experience items should be correlated on both intake and discharge, whereas the current experience items should have comparatively lower correlations when comparing intake and discharge.

Sensitivity to age, gender, pain type and duration of pain effects. As Strong, Ashton and Chant (1992) noted, age and gender differences have often been referenced as important factors in the attitudes and beliefs towards the experience of pain but the direction and impact of these differences are not known. As well, the impact of the location and duration of pain on coping and functional outcomes is not clear. Hunter

(2001) indicated that pain duration (transition form acute to chronic) impacted outcome but that pain location and intensity did not. While, Ptacek and Pierce (2003) noted that individual differences are more critical to determine than any of the defining features of the individual's physical experience of pain or demographics. Thus, it is important to examine the role of pain type and duration to aid in clarifying these issues. In order to test the hypothesis that there were no differential effects on each TERQ theme as a function of age, gender, pain type, and pain duration a between subjects one-way analysis of covariance was performed.

Construct validity. To determine construct validity the TERQ was compared with other commonly used instruments. However, given that four of the seven themes identified are relatively new constructs and are not currently addressed in the literature, it was unclear what measures to use for validation. Specific measures were chosen because of their hypothesized relationship to the constructs of the TERQ. A Pearson-product moment correlation was completed between each theme of the TERQ and the construct variables of the other instruments administered. It is hypothesized that themes of the TERQ would correlate with other measures of similar or related thematic content and would not be correlated with scores on measures of non-related content.

Chapter 6: Results

Discriminant Validity

The intercorrelations between the TERQ themes are summarized in Tables 6 through Table 9. To correct for the number of comparisons made the Bonferroni adjustment was utilized (Strong, Ashton & Chant, 1992). Therefore a correlation with a significance level of .002 is needed to ensure that the correlation indicated has not occurred by chance.

For the PP group the intercorrelations for past experience on both intake and discharge measures range in absolute magnitude from 0.010 to 0.586 (see tables 6 and 8). The highest correlation on previous experience was on discharge between Adaptive Coping and Responsibility for Rehabilitation (.586). In terms of current experience the intercorrelations ranged in absolute magnitude from .006 to .771 (see tables 7 and 9). The highest correlation on current experience was between Adaptive Coping and Responsibility for Rehabilitation (.771) on discharge. Overall, in support of the hypothesis, these results suggest that the TERQ's themes have discriminant validity but upon discharge Adaptive Coping and Responsibility for Rehabilitation appear to have statistically significant overlap in measuring current and past experience. As well, Denial/Regret and Self-Defeating/Passive appear to have statistically significant overlap in measuring current experience on discharge.

Table 6: PP group (intake measures) intercorrelations with previously experienced items.

Themes from the TERQ	Denial/ Regret	Self-Defeating/ Passive	Medication Use/ Pain Focus	Cautious Realism	Accepting Limitations	Adaptive Coping	Responsibility for Rehabilitation
Denial/Regret	1 -						
Self-Defeating/ Passive	.108 .556	1 -					
Medication Use/Pain Focus	.018 .924	.324 .071	1 -				
Cautious Realism	-.030 .869	.161 .379	.211 .245	1 -			
Accepting Limitations	.010 .958	.049 .789	.051 .783	.104 .572	1 -		
Adaptive Coping	.022 .906	.030 .869	.181 .322	.378* .033	.360* .043	1 -	
Responsibility for Rehabilitation	.045 .805	-.153 .402	.040 .827	.230 .205	.485** .005	.496** .004	1 -

** correlation is significant at the 0.01 level (2-tailed)

* correlation is significant at the 0.005 level (2-tailed)

Table 7: PP group (intake measures) intercorrelations with now experiencing items.

Themes from the TERQ	Denial/ Regret	Self-Defeating/ Passive	Medication Use/ Pain Focus	Cautious Realism	Accepting Limitations	Adaptive Coping	Responsibility for Rehabilitation
Denial/Regret	1 -						
Self-Defeating/ Passive	.462** .008	1 -					
Medication Use/Pain Focus	.348 .051	.428* .015	1 -				
Cautious Realism	-.047 .798	-.032 .861	-.094 .607	1 -			
Accepting Limitations	.223 .220	.156 .392	.083 .653	.218 .230	1 -		
Adaptive Coping	.075 .683	-.045 .806	.100 .585	.046 .804	.396* .025	1 -	
Responsibility for Rehabilitation	-.267 .140	-.241 .184	-.372* .036	.278 .123	.454** .009	.513** .003	1 -

** correlation is significant at the 0.01 level (2-tailed)

* correlation is significant at the 0.005 level (2-tailed)

Table 8: PP group (discharge measures) intercorrelations with previously experienced items.

Themes from the TERQ	Denial/ Regret	Self-Defeating/ Passive	Medication Use/ Pain Focus	Cautious Realism	Accepting Limitations	Adaptive Coping	Responsibility for Rehabilitation
Denial/Regret	1 -						
Self-Defeating/ Passive	.416* .018	1 -					
Medication Use /Pain Focus	.186 .308	.299 .097	1 -				
Cautious Realism	.261 .149	.126 .491	.090 .626	1 -			
Accepting Limitations	.028 .880	.023 .900	.151 .409	.030 .869	1 -		
Adaptive Coping	-.035 .849	-.303 .091	-.038 .838	.215 .237	.042 .818	1 -	
Responsibility for Rehabilitation	-.079 .666	-.203 .266	-.133 .469	.360* .043	.204 .264	**.586**** **.000**	1 -

** correlation is significant at the 0.01 level (2-tailed)

* correlation is significant at the 0.005 level (2-tailed)

Table 9: PP group (discharge measures) intercorrelations with now experiencing items.

Themes from the TERQ	Denial/ Regret	Self-Defeating/ Passive	Medication Use/ Pain Focus	Cautious Realism	Accepting Limitations	Adaptive Coping	Responsibility for Rehabilitation
Denial/Regret	1 -						
Self-Defeating/ Passive	**.610**** **.000**	1 -					
Medication Use/Pain Focus	.480** .005	.517** .002	1 -				
Cautious Realism	.524** .002	.454** .009	.076 .679	1 -			
Accepting Limitations	.269 .136	-.116 .526	.039 .832	-.006 .974	1 -		
Adaptive Coping	-.184 .315	-.535** .002	-.497** .004	.140 .445	.186 .309	1 -	
Responsibility for Rehabilitation	-.158 .388	-.453** .009	-.484** .005	.168 .358	.322 .072	**.771**** **.000**	1 -

** correlation is significant at the 0.01 level (2-tailed)

* correlation is significant at the 0.005 level (2-tailed)

Discriminant Validity for Treatment Effects

To determine the treatment sensitivity of the TERQ, the PP group was examined (see Table 10). Denial/Regret and Self-Defeating/Passive demonstrated high correlations on both current and past experience on intake and discharge items. On the other hand, the themes of Medication Use/Pain Focus and Accepting Limitations demonstrated lower correlations. Overall, in support of the hypothesis, previous experience items demonstrated higher correlations than current experience items with Cautious Realism, Accepting Limitations, Adaptive Coping, and Responsibility for Rehabilitation. However, failing to support the hypothesis, the results with Denial/Regret, Self-Defeating/Passive and Medication Use/Pain Focus were equivocal.

Table 10: Correlations of the items of the TERQ: Comparing current and past experience on intake with current and past experience on discharge.

Themes from the TERQ			Discharge	
			Past	Now
Denial/ Regret	Intake	Past	.448* .010	
		Now		.539** .001
Self-Defeating/ Passive		Past	.454* .009	
		Now		.551** .001
Medication Use/ Pain Focus		Past	.115 .532	
		Now		.282 .117
Cautious Realism		Past	.473* .006	
		Now		.088 .633
Accepting Limitations		Past	.291 .106	
		Now		-.245 .176
Adaptive Coping		Past	.360 .043	
		Now		.145 .429
Responsibility for Rehabilitation		Past	.520** .002	
		Now		.076 .678

* correlation is significant at the 0.01 level

** correlation is significant at the 0.005 level

Sensitivity to age, gender, pain type and duration effects

A between subjects one-way analysis of covariance was completed. To correct for the number of tests completed within the ANOVA the Bonferroni adjustment was utilized. This adjustment ensures that the results are not due to chance (Strong, Ashton & Chant, 1992). Therefore, for the PR and PS groups a significance level of .0017 was adopted in order to reject the null hypothesis, and for the PP group a level of .00086. In support of the hypothesis, none of the F-values reached significance levels.

Construct validity

Theme scores were compared to subscale scores of the CSQ, the BDI-II, the PDI, and the PSCQ. It is hypothesized that each theme will be positively correlated with measures of similar construct and negatively correlated with unrelated constructs as summarized in Table 2.

The Pearson product-moment correlations between each theme of the TERQ and the construct validity variables are presented in Tables 11-18. Given the multiple comparisons, Bonferroni adjustments were made to ensure that the results were not due to chance. Therefore, for the all the groups a significance level of .00048 (0.05/105 comparisons) was adopted.

In the PR group, previously experienced items, 8 comparisons reached this [.0005] level of significance (see table 11). The Self-Defeating/Passive theme positively correlated with Catastrophizing on the CSQ and the BDI-II total. The Adaptive Coping item positively correlated with Coping Self-Statements on the CSQ and Action and Maintenance on the PSCQ. The Responsibility for Rehabilitation theme positively correlated with Contemplation, Action and Maintenance on the PSCQ. In the now

experiencing items, 7 comparisons reached this [.0005] level of significance (see table 12). Denial/Regret positively correlated with Catastrophizing on the CSQ. The Self-Defeating/Passive item correlated with Catastrophizing on the CSQ and the BDI-II total. The Adaptive Coping item positively correlated with Diverting Attention on the CSQ. Finally the Responsibility for Rehabilitation item positively correlated with Contemplation, Action and Maintenance on the PSCQ.

In the PS group, previously experienced items, four comparisons were significant (see table 13). The Self-Defeating/Passive theme positively correlated with Catastrophizing on the CSQ and the BDI-II total. The Responsibility for Rehabilitation theme positively correlated with Coping Self Statements on the CSQ and Maintenance on the PSCQ. In the now experiencing items, six comparisons were significant (see table 14). Denial/Regret positively correlated with Ignoring Pain Sensations on the CSQ and Precontemplation on the PSCQ. The Self-Defeating/Passive item correlated with Catastrophizing on the CSQ and the BDI-II total. Finally the Responsibility for Rehabilitation item positively correlated with Ignore Behavior on the CSQ and Maintenance on the PSCQ.

In the PP group [intake measures], previously experienced items, no comparisons were significant (see table 15). In the now experiencing items, two comparisons were significant (see table 16). Denial/Regret positively correlated with Catastrophizing on the CSQ. The Responsibility for Rehabilitation item positively correlated with Maintenance on the PSCQ. In the PP group [discharge measures], previously experienced items, three comparisons were significant (see table 17): The Self-Defeating/Passive item correlated with Catastrophizing on the CSQ, the BDI-II total, and Precontemplation on the PSCQ.

In the now experiencing items, four comparisons were significant (see table 18). Denial/Regret positively correlated with Ignoring Pain Sensation on the CSQ and Precontemplation on the PSCQ. The Self-Defeating/Passive item correlated with Catastrophizing on the CSQ and the BDI-II total.

Table11: Relationships between themes and validity construct variables for PR group on previously experienced items.

Themes from the TERQ	CSQ									BDI-II	PDI	PSCQ			
N_{pre} = 100	Diverting Attention	Reinterpreting Pain Sensation	Coping Self Statement	Praying and Hoping	Ignoring Pain Sensation	Catastrophizing	Behavioral Coping Strategies	Control Over Pain	Ability to Decrease Pain	Total	Total	Precontemplation	Contemplation	Action	Maintenance
Denial/ Regret	.054 .597	.250* .012	.125 .214	.178 .077	.303** .002	.281** .005	.058 .564	.108 .290	.265** .009	.223* .027	.018 .860	.171 .088	.181 .072	.076 .450	.122 .226
Self-Defeating/ Passive	.015 .881	.192 .056	.029 .772	.014 .893	.072 .477	**.486**** **.000**	.105 .300	-.049 .635	.084 .413	**.411**** **.000**	.079 .437	.152 .132	-.023 .817	.105 .300	.085 .400
Medication Use/ Pain Focus	-.110 .278	-.096 .344	-.314** .001	-.207* .039	.096 .341	.152 .131	-.120 .233	-.126 .220	.038 .711	.245* .015	.101 .321	.168 .096	-.180 .073	-.266** .008	-.169 .093
Cautious Realism	.163 .106	.249* .012	.247* .013	.151 .133	.017 .867	.019 .851	.261** .009	.173 .091	.179 .080	-.001 .994	-.086 .396	-.121 .231	.186 .064	.160 .112	.161 .109
Accepting Limitations	.073 .471	-.036 .725	.108 .284	.043 .673	.097 .338	-.057 .570	.151 .133	.082 .424	.030 .769	.022 .827	.043 .672	-.130 .198	.181 .071	.294** .003	.281** .005
Adaptive Coping	.296** .003	.237* .018	**.355**** **.000**	.165 .101	.160 .113	-.085 .400	.326** .001	.170 .096	.153 .136	-.229* .022	-.039 .701	-.187 .063	.237* .018	**.377**** **.000**	**.343**** **.000**
Responsibility for Rehabilitation	.216* .031	.230* .021	.213* .034	.172 .087	.198* .049	-.182 .069	.189 .060	.286** .005	.276** .006	-.021 .838	-.088 .388	-.297** .003	**.403**** **.000**	**.367**** **.000**	**.403**** **.000**

Table12: Relationships between themes and validity construct variables for PR group on now experiencing items.

Themes from the TERQ	88CSQ									BDI-II	PDI	PSCQ			
N_{pre} = 100	Diverting Attention	Reinterpreting Pain Sensation	Coping Self Statement	Praying and Hoping	Ignoring Pain Sensation	Catastrophizing	Behavioral Coping Strategies	Control Over Pain	Ability to Decrease Pain	Total	Total	Precontemplation	Contemplation	Action	Maintenance
Denial/ Regret	.093 .357	.172 .087	-.008 .937	.027 .793	.322** .001	**.399**** **.000**	.139 .168	.022 .834	.179 .080	.315** .001	.154 .129	.220* .028	.077 .444	-.019 .850	.072 .476
Self-Defeating/ Passive	-.002 .988	.119 .239	-.057 .570	-.068 .503	.107 .289	**.538**** **.000**	.003 .976	-.018 .863	.073 .479	**.425**** **.000**	.188 .063	.158 .117	-.004 .965	.009 .927	.002 .986
Medication Use/ Pain Focus	-.065 .519	-.126 .213	-.311** .002	-.294** .003	.074 .463	.215* .032	-.048 .638	-.162 .112	-.057 .576	.188 .062	.167 .098	.208* .038	-.203 .042	-.242* .015	-.152 .132
Cautious Realism	-.027 .789	.206* .040	.152 .132	.101 .318	-.024 .812	.174 .083	.072 .478	.027 .793	.185 .069	.130 .201	.006 .950	.120 .236	.027 .790	.032 .752	.027 .793
Accepting Limitations	.133 .186	-.009 .931	.033 .741	.002 .986	.121 .230	.084 .404	.074 .465	.077 .456	.049 .635	.011 .918	-.032 .756	-.058 .566	.155 .123	.189 .060	.145 .149
Adaptive Coping	**.377**** **.000**	.176 .080	.292** .003	.144 .152	.261** .009	.065 .519	.326** .001	.203* .046	.117 .253	-.123 .227	.073 .470	.009 .932	.213* .033	.315** .001	.274** .006
Responsibility for Rehabilitation	.301** .002	.283** .004	.206* .040	.158 .116	.164 .103	-.125 .214	.169 .093	.223* .028	.192 .060	-.052 .607	-.070 .488	-.269** .007	**.371**** **.000**	**.415**** **.000**	**.465**** **.000**

Table 13: Relationships between themes and validity construct variables for PS group on previously experienced items.

Themes from the TERQ	CSQ									BDI-II	PDI	PSCQ			
$N_{pre} = 46$	Diverting Attention	Reinterpreting Pain Sensation	Coping Self Statement	Praying and Hoping	Ignoring Pain Sensation	Catastrophizing	Behavioral Coping Strategies	Control Over Pain	Ability to Decrease Pain	Total	Total	Precontemplation	Contemplation	Action	Maintenance
Denial/ Regret	.011 .941	-.003 .984	-.118 .434	-.031 .836	.091 .548	.110 .468	.232 .120	.040 .792	.356* .015	.024 .876	-.049 .745	-.387** .010	.029 .850	.250 .102	.022 .889
Self-Defeating/ Passive	-.203 .177	-.237 .113	-.376** .010	-.439** .002	.099 .511	**.647**** **.000**	-.105 .489	-.319* .031	-.448** .002	**.519**** **.000**	.255 .088	.473** .001	-.119 .441	-.073 .637	-.264 .084
Medication Use/ Pain Focus	-.103 .495	-.118 .436	-.249 .095	-.153 .309	.108 .477	.256 .086	.096 .524	-.128 .398	-.146 .334	.121 .424	.087 .563	.207 .177	.154 .319	.066 .672	-.010 .949
Cautious Realism	.206 .169	.088 .559	.098 .516	.047 .757	.061 .686	.139 .359	.291* .049	.101 .506	-.071 .637	-.041 .786	-.059 .698	.147 .341	.214 .162	.111 .472	.141 .360
Accepting Limitations	.157 .298	.053 .724	.189 .210	.018 .908	.025 .867	-.202 .178	.192 .201	.143 .343	.047 .757	-.302* .041	-.019 .902	.051 .742	.399** .007	.370* .013	.315* .038
Adaptive Coping	.328* .026	.199 .184	.356* .015	.388** .008	.154 .306	-.255 .087	.153 .310	.323* .028	.245 .101	-.299* .044	.011 .941	-.354* .018	.331* .028	.424** .004	.275 .071
Responsibility for Rehabilitation	.327* .027	.294* .047	**.493**** **.000**	.406** .005	.104 .491	-.192 .202	.396** .006	.392** .007	-.453** .002	-.202 .178	-.100 .508	.441** .003	.064 .678	-.155 .315	**.513**** **.000**

Table 14: Relationships between themes and validity construct variables for PS group on now experiencing items.

Themes from the TERQ	CSQ									BDI-II	PDI	PSCQ			
$N_{pre} = 46$	Diverting Attention	Reinterpreting Pain Sensation	Coping Self Statement	Praying and Hoping	Ignoring Pain Sensation	Catastrophizing	Behavioral Coping Strategies	Control Over Pain	Ability to Decrease Pain	Total	Total	Precontemplation	Contemplation	Action	Maintenance
Denial/ Regret	.076 .616	-.060 .691	-.006 .967	-.102 .499	**.574**** **.000**	.409** .005	.144 .341	-.146 .335	-.337* .022	.368* .012	.175 .245	**.540**** **.000**	.036 .819	-.064 .678	-.084 .586
Self-Defeating/ Passive	-.048 .754	-.031 .840	-.285 .055	-.191 .203	.192 .201	**.678**** **.000**	-.228 .127	-.216 .150	-.438** .002	**.626**** **.000**	.309* .037	.469** .001	-.007 .964	-.202 .188	-.317* .036
Medication Use/ Pain Focus	-.169 .262	-.157 .297	-.397** .009	-.340* .021	.252 .091	.485** .001	-.026 .866	-.362* .014	-.453** .002	.426** .003	.262 .079	.441** .003	.064 .678	-.155 .315	-.296 .051
Cautious Realism	-.093 .539	-.111 .462	-.017 .909	-.234 .118	.152 .315	.333* .024	-.022 .884	-.229 .126	-.240 .108	.322* .029	.349* .018	.314* .038	.075 .627	-.025 .872	-.018 .908
Accepting Limitations	.197 .191	.012 .936	.181 .229	.054 .724	.158 .294	-.163 .279	.384** .009	.245 .101	.137 .365	-.232 .121	-.159 .291	-.101 .515	.341* .024	.424** .004	.492** .001
Adaptive Coping	.202 .178	.107 .480	.314* .034	.290 .051	.012 .938	-.410** .005	.292* .049	.334* .023	.356* .015	-.429** .003	-.174 .247	-.387** .010	.029 .850	.250 .102	.376* .012
Responsibility for Rehabilitation	.259 .082	.201 .180	.374* .010	.311* .036	-.086 .571	-.388** .008	**.516**** **.000**	.263 .078	.245 .101	-.366* .012	-.173 .251	-.354* .018	.331* .028	.424** .004	**.506**** **.000**

Table 15: Relationships between themes and validity construct variables for PP group [intake measures] on previously experienced items.

Themes from the TERQ	CSQ									BDI-II	PDI	PSCQ			
$N_{pre} = 32$	Diverting Attention	Reinterpreting Pain Sensation	Coping Self Statement	Praying and Hoping	Ignoring Pain Sensation	Catastrophizing	Behavioral Coping Strategies	Control Over Pain	Ability to Decrease Pain	Total	Total	Precontemplation	Contemplation	Action	Maintenance
Denial/ Regret	-.202 .267	-.054 .771	.283 .117	.038 .835	.338 .059	.485** .005	.148 .420	-.018 .923	.357* .045	.278 .130	.110 .550	.358* .044	.130 .479	-.349* .050	-.111 .546
Self-Defeating/ Passive	-.138 .451	-.110 .548	-.211 .245	-.287 .111	-.282 .117	.359* .043	-.187 .307	-.187 .305	-.017 .929	.197 .287	.178 .330	.061 .741	-.323 .071	-.274 .129	-.099 .588
Medication Use/ Pain Focus	.043 .817	.045 .808	-.208 .253	-.064 .729	-.023 .899	.276 .127	-.003 .986	.071 .698	.073 .690	.414* .021	.167 .362	-.078 .671	-.158 .387	-.004 .983	.082 .655
Cautious Realism	.315 .079	.265 .142	.300 .095	.339 .058	-.243 .181	-.146 .426	.394* .026	.273 .131	.421* .016	-.261 .155	-.145 .429	-.231 .203	-.125 .494	.189 .301	.446* .011
Accepting Limitations	.114 .534	.104 .571	.209 .252	.262 .148	.083 .651	-.012 .946	.064 .726	.330 .065	.306 .089	.043 .819	-.253 .163	.033 .858	.090 .626	.396* .025	.389* .028
Adaptive Coping	.250 .167	.260 .151	.298 .098	.370* .037	-.158 .388	-.242 .183	.290 .108	.406* .021	.288 .110	-.383* .034	-.374* .035	-.276 .127	.146 .425	.402* .023	.482** .005
Responsibility for Rehabilitation	.159 .386	.238 .189	.248 .171	.394* .026	.264 .144	-.324 .070	.181 .320	.478** .006	.408* .021	-.155 .406	-.328 .066	-.355* .046	.191 .294	.505** .003	.578** .001

Table 16: Relationships between themes and validity construct variables for PP group [intake measures] on now experiencing items.

Themes from the TERQ	CSQ									BDI-II	PDI	PSCQ			
$N_{pre} = 32$	Diverting Attention	Reinterpreting Pain Sensation	Coping Self Statement	Praying and Hoping	Ignoring Pain Sensation	Catastrophizing	Behavioral Coping Strategies	Control Over Pain	Ability to Decrease Pain	Total	Total	Precontemplation	Contemplation	Action	Maintenance
Denial/ Regret	-.238 .190	-.259 .152	.001 .998	-.176 .336	.278 .123	**.662**** **.000**	.082 .657	.029 .876	.257 .156	.360* .047	.165 .368	.428* .015	-.229 .208	-.560** .001	-.310 .084
Self-Defeating/ Passive	-.324 .070	-.218 .230	-.403* .022	-.336 .060	-.123 .503	.509** .003	-.419* .017	-.182 .320	-.071 .700	.444* .012	.448* .010	.336 .060	-.507** .003	-.411* .019	-.330 .065
Medication Use/ Pain Focus	-.037 .841	-.210 .248	-.235 .195	-.209 .250	-.133 .457	.332 .064	.000 .999	.023 .899	-.186 .307	.420* .019	.224 .217	.161 .378	-.261 .149	-.171 .351	-.197 .279
Cautious Realism	.124 .498	.266 .141	.189 .301	.214 .240	-.224 .217	.052 .777	.135 .462	.026 .887	.394* .026	-.151 .418	-.145 .430	-.025 .892	-.156 .395	.011 .953	.260 .150
Accepting Limitations	.084 .646	.034 .852	.158 .387	.174 .341	.112 .543	.211 .245	.018 .921	.230 .206	.259 .152	.139 .455	-.130 .478	.219 .228	-.084 .646	.167 .362	.239 .188
Adaptive Coping	.386* .029	.148 .420	.244 .178	.316 .078	.013 .945	-.036 .845	.296 .100	.476** .006	.000 1.000	-.236 .201	-.065 .723	-.001 .994	.051 .781	.229 .207	.307 .088
Responsibility for Rehabilitation	.269 .136	.264 .145	.271 .133	.465** .007	.048 .794	-.363* .041	.131 .476	.306 .088	.250 .168	-.165 .376	-.153 .404	-.285 .113	.186 .308	.496** .004	**.601**** **.000**

Table 17: Relationships between themes and validity construct variables for PP group [discharge measures] on previously experienced items.

Themes from the TERQ	CSQ									BDI-II	PDI	PSCQ			
$N_{pre} = 32$	Diverting Attention	Reinterpreting Pain Sensation	Coping Self Statement	Praying and Hoping	Ignoring Pain Sensation	Catastrophizing	Behavioral Coping Strategies	Control Over Pain	Ability to Decrease Pain	Total	Total	Precontemplation	Contemplation	Action	Maintenance
Denial/ Regret	.079 .667	-.058 .753	-.019 .918	-.117 .522	.312 .083	.185 .310	.323 .072	-.039 .830	-.113 .539	.095 .604	-.080 .662	.466** .008	.092 .623	-.037 .844	.029 .875
Self-Defeating/ Passive	-.138 .450	-.108 .556	-.366* .039	-.402* .023	.216 .234	**.715**** **.000**	-.148 .418	-.319 .075	-.504** .003	**.706**** **.000**	.386* .029	**.612**** **.000**	-.010 .956	-.175 .345	-.362* .045
Medication Use/ Pain Focus	-.013 .944	.045 .808	-.164 .369	-.039 .831	.264 .144	.218 .231	.146 .424	.097 .596	-.059 .748	.167 .360	.003 .989	.173 .352	.196 .291	.162 .383	.103 .582
Cautious Realism	.221 .224	.117 .524	.127 .489	.130 .478	.211 .246	.223 .220	.381* .032	.154 .400	-.063 .730	.005 .977	-.152 .407	.250 .175	.251 .174	.027 .886	.166 .374
Accepting Limitations	.104 .573	.078 .671	.141 .442	.011 .953	.300 .096	-.031 .868	.205 .260	.018 .922	-.098 .594	.000 1.00	-.211 .247	.184 .323	.242 .189	.175 .346	.185 .320
Adaptive Coping	.268 .138	.094 .608	.339 .058	.474** .006	.188 .302	-.218 .232	.239 .188	.219 .228	.089 .627	-.326 .068	-.035 .847	-.125 .504	.006 .974	.103 .580	.231 .212
Responsibility for Rehabilitation	.262 .148	.278 .123	.465** .007	.523** .002	.112 .543	-.181 .322	.385* .029	.302 .093	.259 .153	-.221 .224	-.049 .792	-.171 .359	.166 .373	.372* .040	.453* .011

Table 18: Relationships between themes and validity construct variables for PP group [discharge measures] on now experiencing items.

Themes from the TERQ	CSQ									BDI-II	PDI	PSCQ			
$N_{pre} = 32$	Diverting Attention	Reinterpreting Pain Sensation	Coping Self Statement	Praying and Hoping	Ignoring Pain Sensation	Catastrophizing	Behavioral Coping Strategies	Control Over Pain	Ability to Decrease Pain	Total	Total	Precontemplation	Contemplation	Action	Maintenance
Denial/ Regret	.133 .469	.004 .983	-.119 .515	-.079 .667	**.643**** **.000**	.506** .003	.163 .374	-.256 .158	-.439* .012	.491** .004	.170 .352	**.677**** **.000**	.119 .523	-.136 .466	-.255 .166
Self-Defeating/ Passive	-.009 .960	.025 .891	-.258 .154	-.207 .256	.213 .241	**.645**** **.000**	-.159 .384	-.214 .240	-.359* .043	**.675**** **.000**	.373* .036	.498** .004	.019 .919	-.146 .433	-.331 .069
Medication Use/ Pain Focus	-.058 .752	-.014 .939	-.309 .085	-.227 .211	.415* .018	.408* .020	.082 .657	-.188 .303	-.344 .054	.430* .014	.149 .415	.380* .035	.146 .432	-.004 .985	-.192 .302
Cautious Realism	-.008 .964	-.022 .905	-.043 .815	-.022 .903	.309 .085	.340 .057	-.034 .853	-.066 .720	-.151 .410	.320 .075	.274 .129	.315 .084	.156 .401	.033 .861	.015 .938
Accepting Limitations	.099 .591	.049 .790	.040 .829	-.053 .773	.179 .327	-.107 .561	.313 .081	-.091 .620	-.092 .616	.100 .587	-.091 .620	.145 .438	.301 .100	.097 .603	.228 .218
Adaptive Coping	.215 .238	.036 .847	.339 .057	.4224* .016	.104 .571	-.410* .020	.309 .086	.259 .152	.291 .106	-.423* .016	-.179 .326	-.315 .084	.154 .436	.140 .451	.332 .068
Responsibility for Rehabilitation	.250 .167	.170 .352	.435* .013	.450** .010	.039 .831	-.446* .010	.561** .001	.265 .143	.251 .166	-.493** .004	-.211 .247	-.292 .111	.405* .024	.402* .025	.571** .001

Summary of construct validity. Therefore, using stringent criterion, 34 correlations were significant, 6 of the 105 correlations confirmed the hypothesis, and 8 were found but not hypothesized. However, all of the correlations aligned with the hypothesize content of the items and were in the direction anticipated (see Table 19).

Table 19: Summary of comparisons of hypotheses and construct validity findings.

Themes from the TERQ	CSQ									BDI-II	PDI	PSCQ			
	Diverting Attention	Reinterpreting Pain Sensation	Coping Self-Statement	Praying and Hoping	Ignoring Pain Sensation	Catastrophizing	Behavioral Coping Strategies	Control Over Pain	Ability to Decrease Pain	Total	Total	Precontemplation	Contemplation	Action	Maintenance
Denial/Regret	+				F	F	+					C			
Self-Defeating/ Passive			-	+		C		-	-	C		+			
Medication Use/ Pain Focus		-			-						+	+			
Cautious Realism						-							+		
Accepting Limitations														+	
Adaptive Coping	F	+	F											C	F
Responsibility for Rehabilitation			C				F	+	+				F	F	C

Note: C = Confirmed hypothesis; F = Found but not hypothesized; + = positive correlation hypothesized but not found; - = negative correlation hypothesized but not found

Chapter 7: Discussion

The purpose of this study is to determine the validity of the TERQ as a clinical tool to be used in measuring each of the thematic belief constructs. Overall, the TERQ was found to be an instrument that measures unique aspects of the experience of rehabilitation, is sensitive to treatment effects and is useful for differentiating between current and past pain beliefs.

Discriminant validity.

The results of the discriminant validity analysis indicated that upon intake all of the scales demonstrated discriminant distinctiveness, as indicated with non-significant correlations between themes. However, on discharge the Adaptive Coping and Responsibility for Rehabilitation themes did not demonstrate adequate uniqueness for either current or past experience. Thus, these two themes do not appear to measure unique beliefs on discharge. However, the TERQ was found to be useful for differentiating current and past pain experiences. That is, most of the themes demonstrate uniqueness upon intake and discharge and differentiate between past and current pain experiences. Considering the overall distinctiveness of each theme, it is not appropriate to combine the items together into a single cluster score.

Discriminant validity for treatment effects.

The results of the discriminant validity analysis for treatment effects illustrated that the TERQ is sensitive to treatment effects, specifically in regards to the more adaptive coping beliefs: Cautious Realism, Adaptive Coping, and Responsibility for Rehabilitation. However, the remaining themes do not appear to be sensitive to treatment effects. This finding is confounded because the TERQ was only administered on intake

and discharge. It is possible that the treatment effects were not demonstrated because the TERQ was not administered throughout rehabilitation and therefore, the shifts in Denial/Regret, Self-Defeating/Passive, Medication Use/Pain Focus, and Accepting Limitations were not sampled. More research into the sensitivity of the remaining themes is necessary.

Sensitivity to age, gender, pain type and duration effects.

As noted previously, most scales have been developed for use with one population and sometimes have limited generalizability to other pain types and locations (Hadjistavropoulos, Asmundson & Norton, 1998). Therefore, it was important to demonstrate that there were no differential effects of age, gender, pain type, and pain duration on TERQ scores. Thus we can conclude that the TERQ can be generalized to women with chronic pain, as well as to other pain locations, types and intensity levels within Pain Management programs in rehabilitation settings.

Construct validity

Given that it was demonstrated that overall the TERQ measures different themes with each scale, it was compared with other measures of pain coping to provide evidence for the belief constructs.

Denial/Regret. The results indicate that the Denial/Regret theme measures a similar construct as Ignoring Pain Sensations and Catastrophizing on the CSQ and Precontemplation on the PSCQ. It appears to measure the cognitive coping strategy of denying the effects of pain on one's life and catastrophizing. Further, it is characterized with the belief that their pain is a medical condition and that the responsibility for management lies with the medical professionals. Overall, the client in this phase of

rehabilitation expresses little interest in changing his or her behavior. These findings support the hypothesis that this theme contained items with a negative emotional valence and that these emotions tend to occur in the early stages of change. It was hypothesized that Denial/Regret would correlate with distraction coping strategies rather than denial of the effects of pain because some findings on the Ignoring Pain Sensation subscale on the CSQ have indicated that denial as a coping strategy correlates with more adaptive coping beliefs (Lawson, Reesor, Keefe & Turner, 1990). However, there have been difficulties with the factor structure of the CSQ and it may be that the Denial/Regret theme correlates with the subscale of Ignoring Pain Sensation because it encompasses aspects about the denial of pain. On the other hand, Diverting Attention includes an acceptance of the presence of pain and the actions and thought of the person are acting to distract himself/herself from the pain rather than deny the existence of the pain. This also provides more evidence that it is not just the avoidant behavior that is important to note because there was not a significant relationship with the Behavioral Coping Strategies subscale on the CSQ. Therefore, it is the beliefs that create the avoidant behavior that are important to note. Overall, the name for this theme appears to be accurate.

Self-Defeating/Passive. The Self-Defeating/Passive theme measures a similar construct as the Catastrophizing subscale on the CSQ and depression as measured by the BDI-II, as hypothesized. However, this theme did not significantly correlate with any of the stages of change as hypothesized. There was a link with Denial/Regret in that both themes correlated with Catastrophizing on the CSQ but the discriminant validity analysis indicated that these themes are not significantly correlated. It was also noted that the Self-Defeating/Passive theme also is related to depression, which the Denial/Regret did not

correlate with. Thus, this theme appears to measure similar aspects of depression as the BDI-II. It is also the only theme that was found to correlate with depression.

Adaptive Coping. The results indicate that Adaptive Coping correlates with Diverting Attention and Coping Self-Statements on the CSQ, as well as Action and Maintenance on the PSCQ. Although this theme has not appeared directly in the literature, Knish and Calder's (1999) conclusion that it is indirectly present in many scales is confirmed. The links with Diverting Attention and Coping Self Statements on the CSQ suggest that avoidance behavior is an effective coping strategy when it is paired with self-efficacy statements. Application of these thoughts also correlated with Action and Maintenance.

Responsibility for Rehabilitation. Responsibility for Rehabilitation appears to measure similar constructs as measured by Coping Self Statements and Behavioral Coping Strategies on the CSQ. As well, it correlated with Contemplation, Action and Maintenance on the PSCQ. These correlations indicate that with Coping Self-Statements the client is able to increase his or her activity level (as indicated by the correlation with Behavioral Coping Strategies). Further the theme correlated with three of the four stages of the PSCQ (Contemplation, Action, and Maintenance) following Norcross and Prochaska's (2002) proposal of the Stages of Change as a process not discrete steps or stages. Therefore, Responsibility for Rehabilitation appears to be related to an internalization of the rehabilitation process, whereby the client believes that self-management is possible and is able to determine the types of behavioral strategies to engage in to decrease his or her pain.

Medication Use/Pain Focus, Cautious Realism and Accepting Limitations. There were no significant correlations for the Medication Use/Pain Focus, Cautious Realism and Accepting Limitations themes. It appears that these constructs are not present in the instruments chosen. However, as previously noted, the use of medication does not directly address coping skills and, therefore, may not be present in the coping strategies questionnaires utilized (Gonzales et al., 2000). In addition, Cautious Realism has not been addressed in coping literature and Accepting Limitations has had minimal research. Whereas, both Denial/Regret and Self-Defeating Passive are found in the current coping literature and are highlighted as obstacles or the antithesis of adaptive coping and Adaptive Coping and Responsibility for Rehabilitation are also found in the literature as goals for treatment and examples of effective coping. Thus, it is possible that the Medication Use/Pain Focus, Cautious Realism and Accepting Limitations themes do not measure coping or the antithesis of coping but rather document a progression from non-adaptive coping to more adaptive coping skills. The correlations with the Responsibility for Rehabilitation underscore this interpretation, if we accept that the individual has internalized the coping process or the process of rehabilitation so that they are able to modify their behavior and re-evaluate the effectiveness of their coping strategies without the aid of the external rehabilitation environment.

Therefore, the lack of findings for Medication Use/Pain Focus, Cautious Realism and Accepting Limitations, although not as hypothesized, are interesting, in that Knish and Calder (1999) described both Cautious Realism and Accepting Limitations as specific value shifts that occur as an individual moves along the map in their experience of the rehabilitation process. So, these beliefs perhaps are not addressed in the

instruments given because they are not maladaptive or adaptive coping strategies. But rather, are descriptive of the process of moving from maladaptive to adaptive coping strategies. It is possible that these beliefs relate to the recognition that self-management of pain is possible but highlight the process of this value shift.

Implications for Practice

Rehabilitation programs are currently interdisciplinary, they include exercise therapy, physical therapy and occupational therapy as well as psychological and medical services. The addition of the TERQ as an assessment tool would help to clarify the role of each of these components to improve program planning. Since the Denial/Regret theme measures the negative beliefs that coincide with avoidant beliefs treatment should be aligned with emotional regulation training and emotional awareness training. Further, since the Self-Defeating/Passive theme measures catastrophizing and depression, physical rehabilitation should be in conjunction with or following counselling and possibly medication management targeting depression. Clients who endorse beliefs in the Adaptive Coping theme appear to use avoidance behavior as an effective coping strategy when paired with self-efficacy statements, therefore cognitive behavioral strategies to target non-effective or self-effacing statements may be helpful. Finally, the Responsibility for Rehabiliation theme appears to indicate a way to determine when clients can be discharged from active or post treatment supports because it appears to indicate an internalization of the coping process or the process of rehabilitation. Thus, clients with these beliefs appear to be able to modify their behavior and re-evaluate the effectiveness of their coping strategies without the aid of the external rehabilitation environment.

Therefore, the validation of the TERQ allows for a way to measure and recognize shifts in client's core beliefs about disability and offers a way to measure movement forward in terms of rehabilitation even in the absence of functional gains. This research aids in increasing clinician's understanding of the experience of chronic pain and helps to identify beliefs that facilitate or hinder the rehabilitation process and effect durable return to work. Considering the sensitivity of the TERQ to treatment effects it can be used to aid in the development and evaluation of programs designed to overcome barriers to return to employment, through improving both the practitioner and client's view of their internal process and progression of chronic pain. Finally, this research aids in the identification of best practices through validation of a new clinical tool, the TERQ, that can help address the needs and state of the client more effectively, through providing a process of change that is validated for a chronic pain population.

Limitations of this study

The Medication Use/Pain Focus, Cautious Realism and Accepting Limitations themes were not captured and thus did not correlate with any of the other measures given. This may be due to the content of currently used instruments (as previously noted) or the structure of this study: We did not sample the population during the rehabilitation process, rather we sampled on intake and on discharge. Therefore, to determine if these three themes offer a new dimension to the rehabilitation process it will be important in the future to administer the questionnaires at intake, discharge and at least once in the rehabilitation process. This will also provide more insight into the sensitivity of all of the themes of the TERQ.

As well, an analysis of the reliability of the TERQ was not possible with the data set gathered. This analysis will be critical to future use of the TERQ as a facilitative instrument in treatment planning. To do so the TERQ should be administered to a waitlist control group so test-retest reliability can be computed.

Directions for Future Research

Future studies should examine the following:

1. Further evidence that would shed further light on the utility of the TERQ could be found if the predominant theme the client identified was found to change over the course of treatment and that the cluster identified correlated with outcome both short and long-term.
2. What do the Medication Use/Pain Focus, Cautious Realism and Accepting Limitations clusters measure?
3. Are all of the themes of the TERQ sensitive to treatment effects?
4. How well do the scores on the TERQ predict future response and outcome in rehabilitation?
5. What types of interventions are most effective for each cluster of beliefs to promote progression towards more adaptive coping beliefs?

Conclusion

This research adds to the current literature base in the area of chronic pain. It adds to our understanding of chronic pain through the validation of a new clinical tool to help identify the needs and state of the client more effectively. It can increase clinician's understanding of the experience of chronic pain clients in rehabilitation settings and can aid in the identification, and possibly resolution, of factors that facilitate or hinder

durable return to work. As a measure that accurately assesses cognitive beliefs and coping strategies the TERQ can aid in individualized program planning. This is achieved through validating a tool that allows a clinician a way to access the beliefs systems that may be related to the experience of pain and rehabilitation. Thus, it promises to aid in the development and evaluation of programs to overcome barriers to return to employment, through improving both the practitioner and client's understanding of their internal process and progression of chronic pain. Finally, this research promises to aid in the identification of best practices through further development of the TERQ by helping to address the needs and state of the client more effectively.

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Appendix A

Belief statements of the seven clusters.

Theme	Cluster Belief Statements	Bridging Index
Denial/ Regret	I would have to have good odds before I would have surgery.	.43
	If you have done the things that I have done over the years you can expect to have a worn out back.	.46
	I think I can control the pain by doing the same activities and work I was doing before the injury.	.58
	If I was more physically fit I wouldn't be in this position.	.60
	I think that by working through excessive pain I can avoid losing my job.	.61
	I don't want to think I have a serious back injury so I put it out of my mind.	.62
	I have to go back to work and that's all there is to it.	.64
	I kept working after the original injury because I did not think it was serious.	.82
	The worst thing that could happen is that I would have to go in for a back operation.	.83
	Sports are my life.	1.00
	Cluster Average	**0.66**
Self-Defeating/ Passive	At times I think there is no way to control the pain.	.35
	When I am having a pain flare-up I need it to stop immediately.	.38
	People don't want to have much to do with me because they are scared that I will hurt myself.	.39
	It has been difficult to be around healthy people because they can do activities I can't do because I might hurt myself.	.40
	I have to limit how close I stay to friends so I don't put pressure on them to make sure I am enjoying myself.	.41
	I think pain is depressing.	.41
	It is my fault that I am in pain.	.43
	I think I can become paralyzed because of the injury.	.47
	I don't know when to stop activities because I am not sure if the pain is caused by a normal reaction to exercise or because I am doing further harm to my back.	.60
	Specialists just tried to ship me out as quickly as possible without providing a good explanation about my injury.	.61

Cluster Average		**0.45**
Medication Use/ Pain Focus	I don't do things I think will hurt me and this can keep me from doing things I might be able to do.	.36
	At times pain can hurt or effect my family as much as it does me.	.40
	I can get addicted to medications that have codeine in them.	.41
	Taking too much pain medication can cause me to focus more on the pain.	.46
	There is no prescription drug that can get rid of pain without causing some type of problem.	.46
	At times when I am having pain so severe I have to take some pain medications.	.48
Cluster Average		**0.43**
Cautious Realism	Having had a bad flare-up makes the next one easier to deal with.	.18
	There is going to be a time when it gets worse before it gets better.	.20
	My back pain injury can contribute to pain in other parts of my body.	.24
	I can't control my back condition with heat or other temporary kinds of relief because it will eventually get worse if I don't modify my activities.	.25
	I don't think I will ever be 100%.	.27
	I would rather change to some form of lighter work and live with what I have than have a back surgery.	.30
	At times my mood can really bring on the pain more than what I am doing physically.	.30
	I distract myself from the pain by watching a lot of television and it helps me cope with pain.	.32
Cluster Average		**0.26**
Accepting Limitations	I have to change my lifestyle to a degree to accommodate my limitations.	.05
	My limits are different for different situations and depend upon what I am doing.	.08
	I am still learning the things that I can and can't do.	.11
	Holding things in that are bothering me can create pain in other areas of my body.	.13
	People with back injuries have to cope with big changes in their lives.	.16
	It is important to let people know where I am at and what my limitations are.	.20

	I have to accept that I need help to do some things.	.20
	The TENS unit is a better way to cope with pain than any prescription drug.	.22
	Once I have found my limitations I have to stick to them.	.23
	I think that if you have a problem with drugs or alcohol it is important to get some kind of help.	.38
	Pain medication only masks pain which can lead to more damage in the long run.	.39
	The first step in improving my life is to get off the pain medication.	.39
	Cluster Average	**0.21**
Adaptive Coping	When you understand the pain from your injury it helps you to deal with it better.	.00
	The most important thing to help cope is to accept the injury.	.00
	If my injury does not get better over time I will have to learn to live with it.	.01
	I know it is going to take a while to heal and I have accepted that.	.02
	It is helpful to be with other injured people as a start to getting motivated again.	.02
	I believe it is important to pace myself.	.03
	Learning about my injury will help me deal with the injury better by helping me understand my limitations.	.03
	I would need counselling or some form of help to learn to live with big changes in my lifestyle.	.04
	I can learn to control my pain to a certain degree if I have the proper training and I apply myself.	.05
	My pain is the same as it was but now I feel better.	.05
	I can still be involved with my children even though I can't participate in as much physical activities with them.	.05
	It doesn't do any good to think about pain all the time.	.05
	I think that talking to people about my injury and pain helps.	.05
	Doing activities with my family is an important part of dealing with my injury.	.06
	I can use positive thoughts to focus away from the pain and get some relief.	.07
	You have to think positively and not think you can't make it because you have a sore back.	.08
	It helps me deal with my injury when I compare it to others and realize that it could be much more serious.	.12
	I need to find my limits through trial and error.	.13

	I know I can find some type of work even with my limitations.	.19
	I have to take it step by step and hope for the best.	.19
	Cluster Average	**0.06**
Responsibility for Rehabilitation	I can relieve stress by keeping busy with activities.	.01
	I am doing things to compensate for stiffness and soreness.	.06
	Being physically and mentally fit is the most important thing when you have constant back pain.	.06
	I may not get rid of some of the pain but I am going to get the best physical function that I can with what I have left.	.07
	Regular exercise and strengthening will improve my posture and stop some of the pain.	.07
	Some good opportunity may still come out of this back injury.	.08
	By strengthening my back and abdominal muscles I can go over the hump and carry on.	.10
	Improving my overall fitness has got me feeling better both physically and mentally.	.11
	I think I can still participate in recreational activities to a lesser degree to stay involved.	.12
	I have to cooperate and communicate with my therapist for my rehabilitation to be successful.	.16
	My rehabilitation program is helping.	.17
	I think my rehabilitation is a full-time job.	.21
	Being in poor physical condition (like being overweight) will increase my pain level.	.22
	I can use the resources available through WCB to help me find work.	.31
	WCB is an employer who is employing me to be rehabilitated.	.34
	It doesn't help to focus on the possibility that employers will be biased against workers who have been on WCB.	.45
	Cluster Average	**0.16**

Note. From *Concept mapping the beliefs of chronic low back pain sufferers* (p. 138-143), by S. Knish, 1994, Unpublished doctoral dissertation, University of Alberta, Canada. Reprinted with permission.

Appendix B

EXPERIENCE OF REHABILITATION QUESTIONNAIRE

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Name: _____ Claim Number: _____

Date: _____ Program _____ Admission ____ Discharge____

Date of Injury _____ Type of Injury _____

The themes on the following pages were developed after interviewing individuals in pain who have had an injury. It represents a number of different beliefs and experiences that pain sufferers had following their injury.

Please examine the description of each theme on the following pages and answer the questions by **circling** your response.

THEME A

In this theme pain sufferers were realistic believing that they could not go on dealing with injury the same way. But they were cautious and knew it would be difficult to try new ways to deal with their pain like doing more activity and perhaps using less medication. Pain sufferers held beliefs such as:

"There is going to be a time when it gets worse before it gets better."
"I don't think I will ever be 100%."
" Having a bad flare-up will make the next one easier to deal with."

1. I have had similar thoughts or experiences.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

2. I feel this is where I am **now** in my rehabilitation.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

THEME B

This theme was characterized by negative thoughts about one's self and the injury. There was a tendency to want to isolate one's self and feel that there was no way to control the pain or what was happening. Pain sufferers also felt that here must be a cure and did not understand or accept that their pain condition was or could be chronic. Some beliefs people reported having related to this theme include:

"I will become paralyzed because of the injury."
"People don't want to have much to do with me."
"I think pain is depressing."

3. I have had similar thoughts or experiences.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

4. I feel this is where I am **now** in my rehabilitation.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

THEME C

Within this theme pain sufferers suggested that they used a significant amount of medications to deal with their pain. They stated that although the medications may not have been effective they still felt that it was one of the only ways to cope. Pain sufferers felt that because their injury was not improving it was difficult not to focus a great deal on the pain experience. They also held these beliefs:

"Pain medications are the only real way to manage my pain."
"I have to take pain medications even if they are not working that well."
"I don't do things I think will hurt me and this can keep me from things I might be able to do."

5. I have had similar thoughts or experiences.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

6. I feel this is where I am **now** in my rehabilitation.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

THEME D

This theme is represented by beliefs that there is no cure for chronic pain and that there are tasks or activities that have to always be done to manage pain. Some of the beliefs include:

"Being physically and mentally fit is the most important thing when you have pain."
"Regular exercise and strengthening will improve my posture and stop some of the pain."
"I think my rehabilitation is a full-time job."

7. I have had similar thoughts or experiences.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

8. I feel this is where I am **now** in my rehabilitation.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

THEME E

This theme represents the use of coping strategies to deal with pain. The statements that best represent this theme are:

"I believe it is important to pace myself."
"Doing things with my family is an important part of dealing with my injury."
"I can use positive thoughts to focus away from the pain and get some relief."

9. I have had similar thoughts or experiences.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

10. I feel this is where I am **now** in my rehabilitation.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

THEME F

Individuals stated that in this theme they would deny the seriousness of their symptoms or regret that the accident occurred. They held beliefs such as:

"I didn't want to think I had a serious injury so I put it out of my mind."
"I kept working after the original injury because I didn't think it was serious."
"Why did this happen to me?"

11. I have had similar thoughts or experiences.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

12. I feel this is where I am **now** in my rehabilitation.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

THEME G

Chronic pain sufferers stated that in this theme they were accepting the consequences of their injuries. This theme is best represented by the statements:

> "I have to change my lifestyle to a degree in order to accommodate my limitations."
> "I have to accept that I need help to do some things."
> "Pain medication only masks the pain which can lead to more damage in the long run."

13. I have had similar thoughts or experiences.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

14. I feel this is where I am **now** in my rehabilitation.

0	1	2	3
Not at all	To a Slight Degree	To a Moderate Degree	To A Great Degree

If you recognized going through any of the themes do you believe that they are happened in any order and in which order did they happen for you? If any theme did not apply to you just ignore it.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Do you believe that you have experienced going through any of the themes more than once. If so, describe your experience. Using the back of the page if necessary.

Based on your experience of having an injury is there anything that was not included in the themes? If so, please describe. Use the back of the page if necessary.